

KEWEEENAWAN  
1949



MICHIGAN COLLEGE OF  
MINING AND TECHNOLOGY







Property of  
Advertising Dept



GC  
977.402  
H81K,  
1949

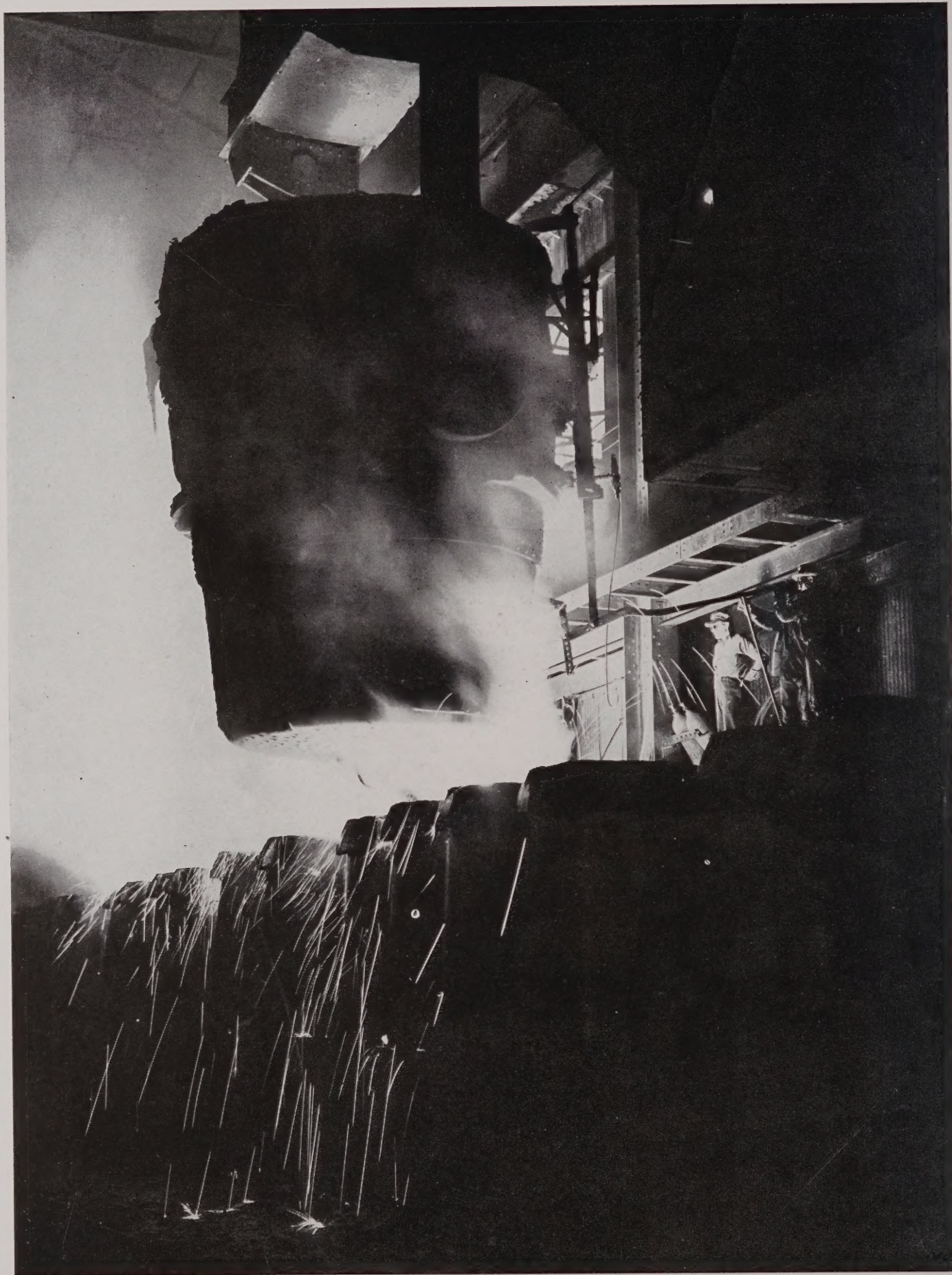














The  
Nineteen Hundred  
and Forty-Nine  
**KEWEENAWAN**



Published by the Student Organization  
of the  
MICHIGAN COLLEGE OF MINING  
AND TECHNOLOGY  
Houghton, Michigan



## IN MEMORIAM

The sudden death of Dr. Willard H. Dow on March 31, 1949, was received with sadness by the nation, by industry and by the many institutions of higher learning to which he was a kind benefactor. In memory of the time and devotion invested in us by this great man, we of the Michigan College of Mining and Technology wish to dedicate this the 1949 Keweenawan, to him.

Dr. Dow had served on the Board of Control since 1946. During that time he was ever ready to cooperate fully with any college undertaking. He received many academic and professional awards for his outstanding ability, including an honorary Doctor of Science degree conferred upon him by the Michigan College of Mining and Technology in 1939.

His accomplishments are his monuments. His outstanding efforts toward the winning of the great World War II carve for him a prominent niche in the hall of the defenders of democracy. He is not dead, for he still lives in the hearts of those who cherish freedom.









**Dr. Grover C. Dillman**

President of the Michigan College  
of Mining and Technology



MICHIGAN COLLEGE OF MINING AND TECHNOLOGY  
OFFICE OF THE PRESIDENT  
HOUGHTON, MICHIGAN

GROVER C. DILLMAN

To the Students of the College:

The publication of the 1949 Keweenaw marks the completion of another academic year. Quite naturally at a time like this, we tend to survey both the accomplishments of the past and the problems of the future.

The 1948-49 academic year has been one of the busiest in the history of the College. To a great extent we have converted from the accelerated war-time and postwar programs to a basis of regular operating procedure. This conversion has been marked by a frictionless blending of veteran and non-veteran enrollment and by a stabilization of our overall College program.

We have in no sense, however, simply reverted to prewar status. We are more conscious now of education's obligation to the nation and to the world, and our program has been redesigned to fulfill those obligations.

How well we have succeeded will be determined by the success achieved by our graduates when they enter the active fields of science and engineering. We have confidence in their ability to face the problems of the world and to find satisfactory solutions. I am sure that the administration of the College, the faculty and staff, and the undergraduate student body wish them all success and happiness.

Sincerely,

  
President

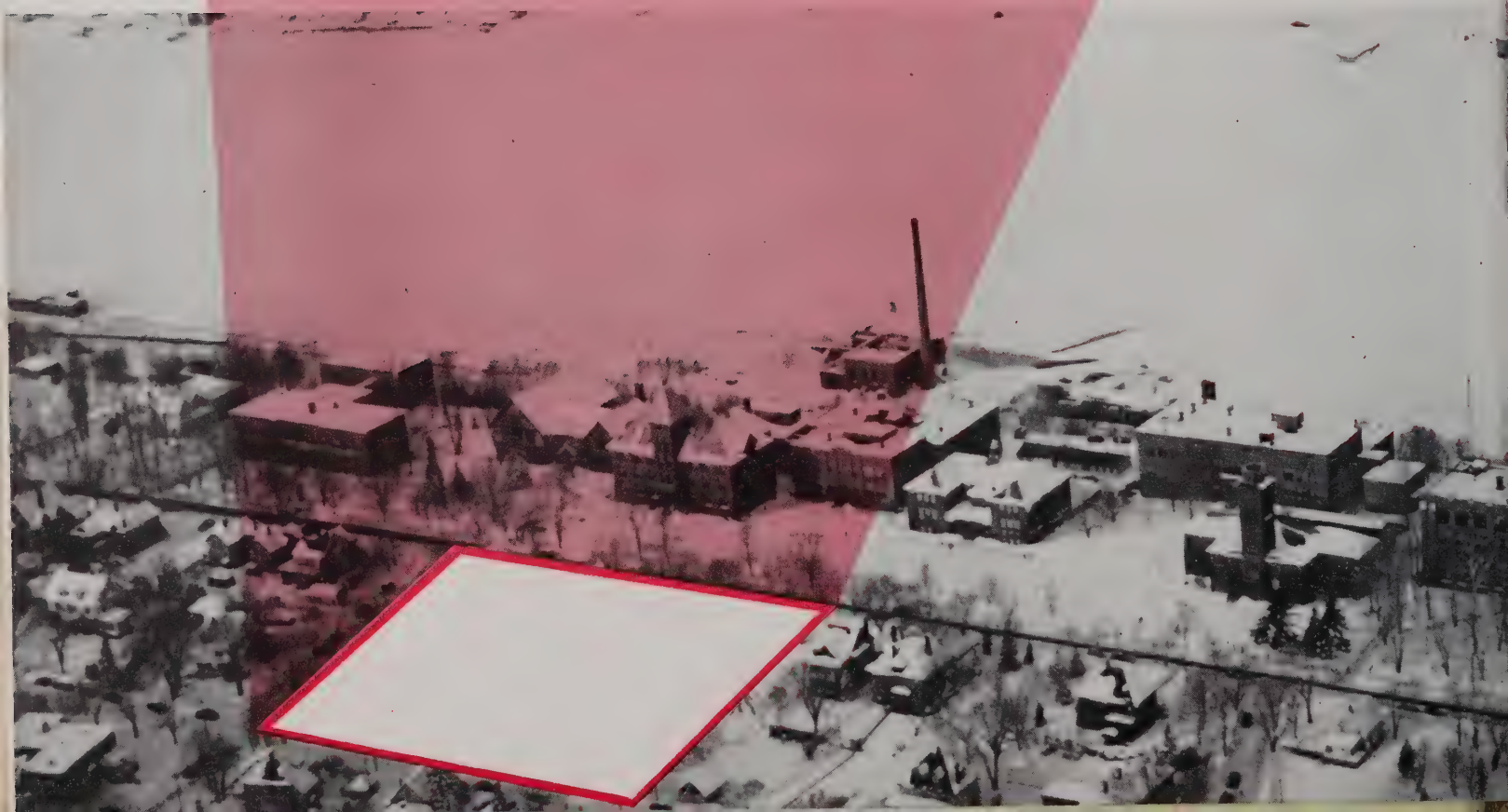




## ALUMNI ASSOCIATION

The Alumni Association has been active on the campus since 1892 and as more students have graduated into the field of engineering, the usefulness has increased accordingly.

The Alumni Association serves many purposes, but the main function is to create state and metropolitan alumni clubs so the graduates can keep in contact with former classmates and meet new alumni of Tech.







FRONT ROW: H. T. Mercer '98; E. P. Scallon '06;  
R. D. Satterley '25; J. Fisher '93.  
BACK ROW: C. C. Hascall '11; Harold Grams '31;  
P. W. Swift '33; J. S. Westwater '34.



The Soliciting of funds that are used in the improvement of the college is also taken up and the large project now in progress is the Memorial Union Building. The plan for the Memorial Union Building originated in June of 1947. The total cost of the project will be in the neighborhood of \$750,000.00, of which \$300,000.00 will be raised by donations and the remainder will be self-liquidating. It is satisfying to know that over \$200,000.00 in generous contributions have been donated.

The Alumni Association also publishes the Alumni Bulletin. This Bulletin is published monthly for the purpose of forming a bond of interest of the Alumni, with the college, by relating the various activities that happen at the college. It also keeps alumni informed of members who have moved, promoted, etc.

The Alumni Association is doing a swell job and to it we say... "Nice going."



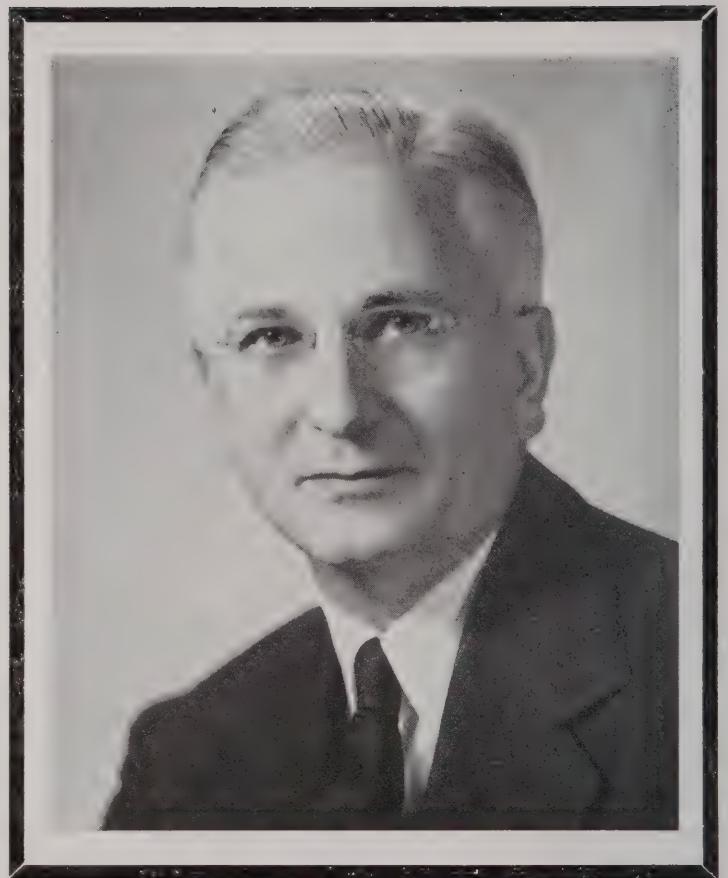
# BOARD OF



**GEORGE A. OSBORN**  
A.B., B.S. E.M.  
Editor and publisher of The Evening News  
Sault Ste. Marie, Michigan.



**F. A. FLODIN**  
President, Lake Shore Engineering Company  
Director, Wellman Engineering Company.



**WILLARD H. DOW**  
B.S., Hon. D.Sc., Hon. D.Eng.  
President, Dow Chemical Company  
Died March 31, 1949.



# CONTROL



**E. R. LOVELL**

B.S., E.M.

President, Calumet and Hecla Consolidated Copper Company

Director, Merchants and Miners Bank, Calumet, Michigan  
Director, Detroit and Northern Michigan Building and Loan Association.

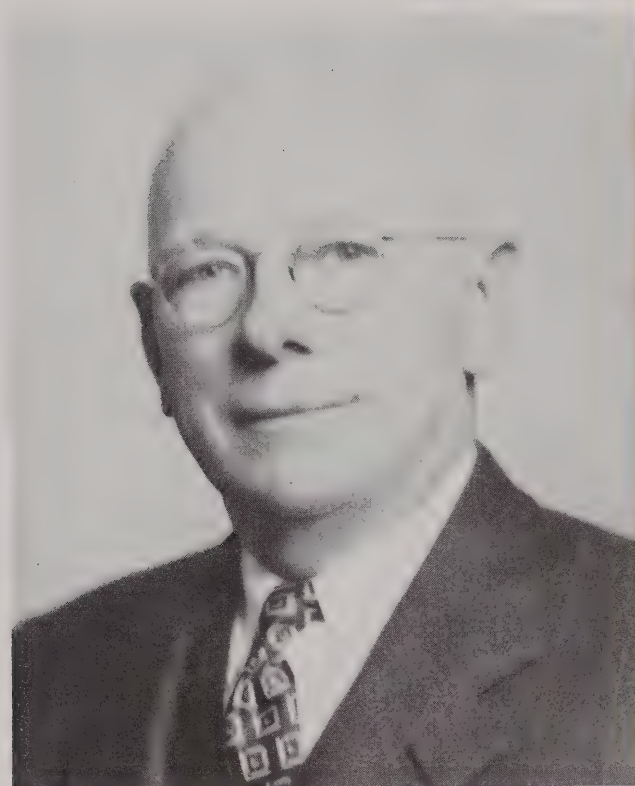
**C. J. STAKEL**

E.M.

General Manager, Mining Department, Cleveland-Cliffs Iron Company

Vice-President, Negaunee Mine Company

Vice-President, Cliffs Power and Light Company.



**F. J. SMITH**

B.S., E.M.

Range Manager for Oglebay Norton and Company.

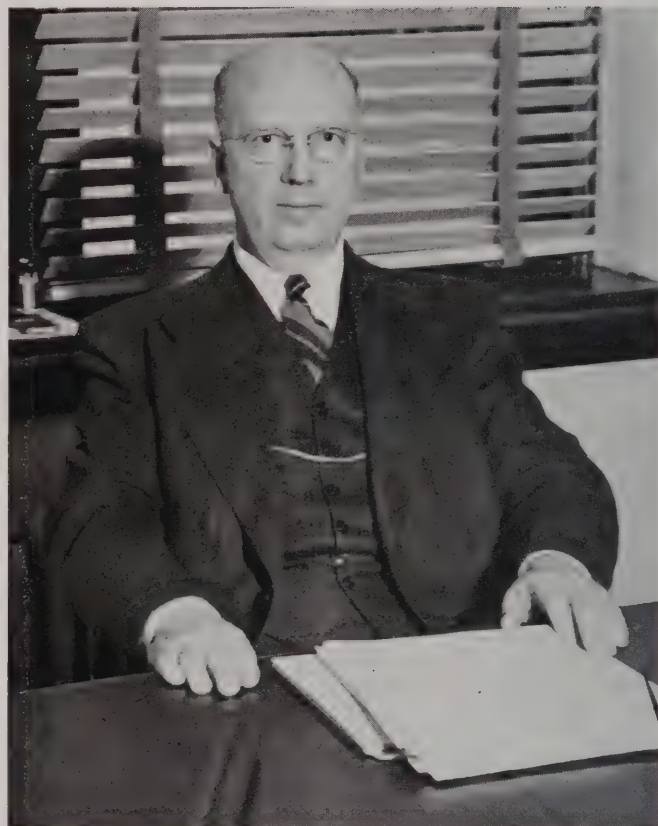




# ADMINIS



NICKOLAS F. KAISER,  
Treasurer and Business Manager



F. L. PARTLO,  
Dean



LEO F. DUGGAN,  
Registrar



# TRATION



MISS RUTH JOHNSON,  
Assistant Registrar

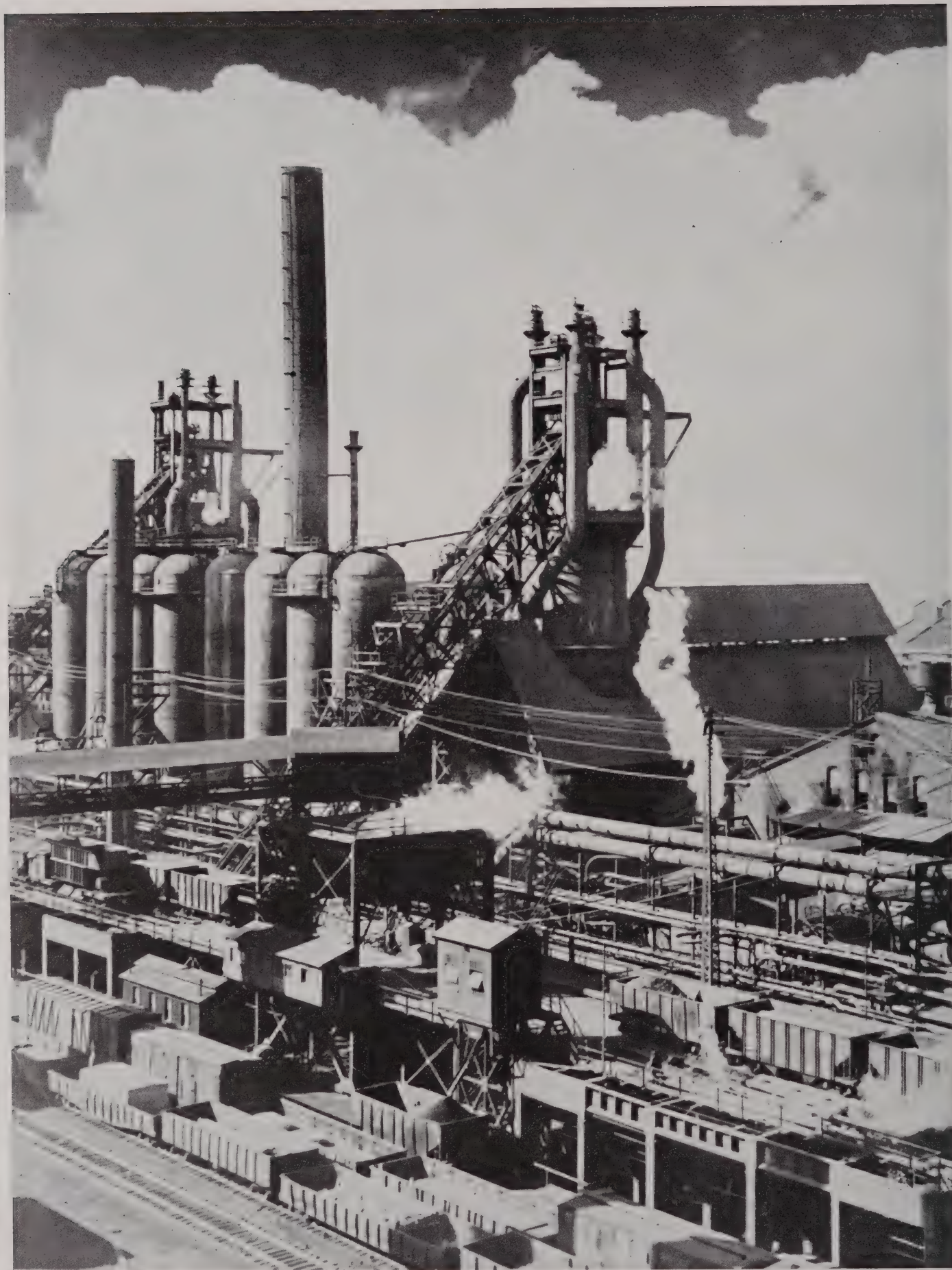


B. B. BENNETT,  
Director of Public Relations



E. J. TOWNSEND,  
Assistant Treasurer







The  
Department of  
**METALLURGICAL  
ENGINEERING**







DR. CORBIN T. EDDY

Heading the Department of Metallurgy is Dr. C. T. Eddy. He received the B.S., E.M. and Ph.D. degrees from the Michigan College of Mining and Technology and attended the University of California and the Technische Hochschule of Aachen. In 1927 Dr. Eddy joined the Michigan Tech staff as an instructor in Metallurgy, and in July of 1940 he was appointed head of his department.

Dr. Eddy has engaged in research and consulting work and is the author of numerous publications in the field of metallurgy. He was awarded the Alfred Nobel prize in 1931 for, "The most outstanding contribution to the metallurgical field of science by men under thirty years of age."

Dr. Eddy is listed in "Who's Who in Engineering"; "American Men of Science"; "America's Young Men"; "Who's Who in the Middle West", and "Who's Who in American Education". He holds membership in a number of metallurgic and scientific organizations including the Institute of Metals in London. His social groups include Tau Beta Pi, Alpha Sigma Mu, and the Theta Tau fraternities.

## METALLURGICAL ENGINEERING

Caldron burn and fire bubble. Perched over the inferno at the nearest furnace, sits the student metallurgist. Into the seething mass of metal he tosses first a pinch of this, then a pinch of that. Every little element contributes toward the final product. At last, chuckling to himself, the operator pours the molten mixture into the mold.

Somehow, these laboratories always look like something Dante forgot to mention when he took his little trip. First, there is the glowing fire, casting deep shadows in the flickering light. Then there is the instructor, surrounded by a group of intent students. Look closely, and the features remind one of a potential Dr. Faustus. Some students carry the similarity to the extent that they have tales, real or imaginary. And of course, from their bookbags protrude little pitchforks.

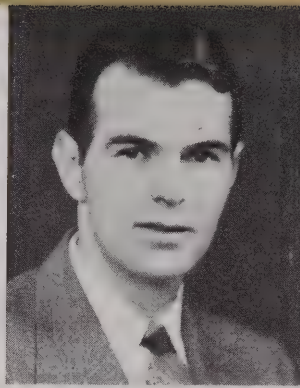
What can prompt men to forsake the world and take up this occult science? Who could sell himself

to such a profession? The answer lies in examining closely the work of the metallurgist.

The pile of dirt concerning the miner isn't very useful as it stands. Some children could have a whale of a time playing in it, but modern industry has grown a little old for that sort of thing. Instead, it wants a metal that is reasonably pure and shining. The metallurgist charges up his furnace or wires up his cell, and proceeds to perform this small miracle. He comes up with a material that can be wrought or molded into shapes and sizes that are necessary to industrial operations.

The metallurgist can be filled with that feeling of well-being that comes with a job well-done. He has brought forth metals that can be used for the betterment of the whole world. He does this for his fellow man and, like most engineers, for money... lots of it!





W. Moore



D. Swartwout, Jr.



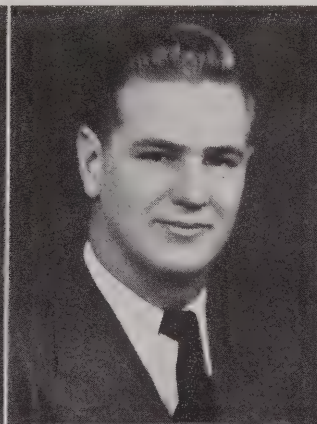
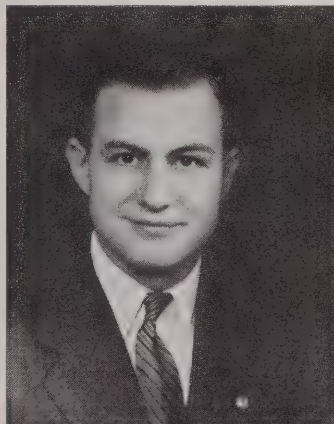
F. Charles, Jr.



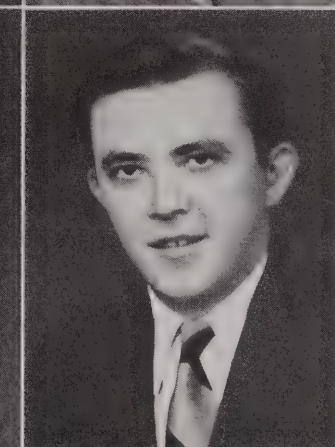
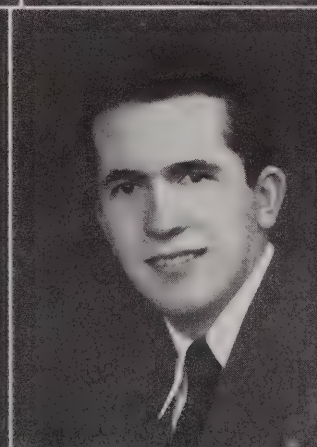
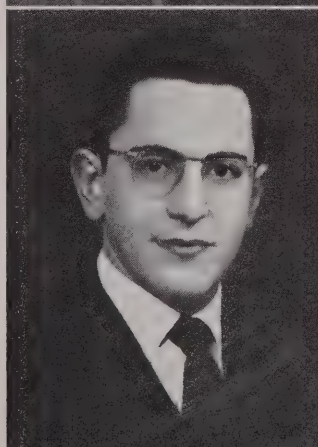
C. Eberhardt



G. W. Boyd

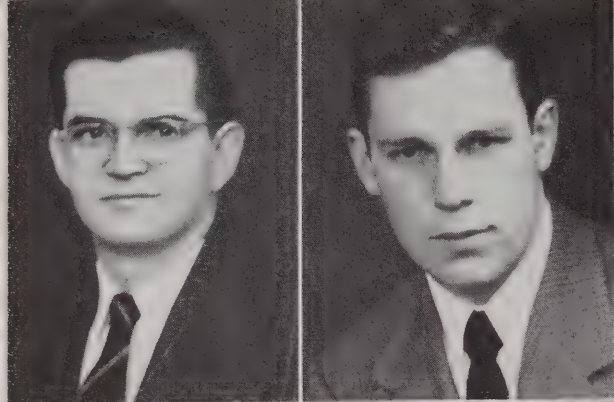


F. Wilson  
R. Donley  
H. Barrons

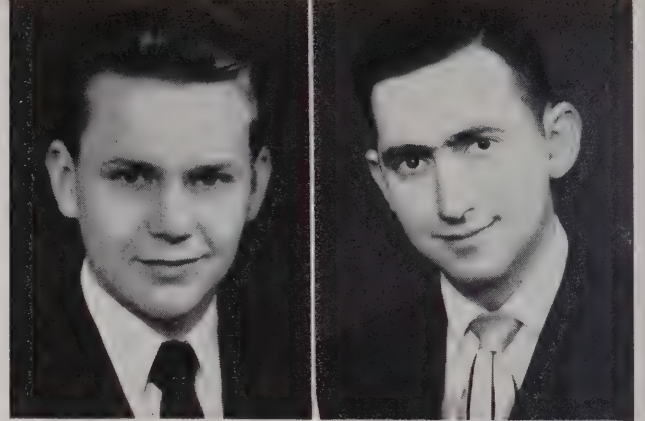


C. Adler  
J. Vrugink  
R. Schnitzel





R. Bietz  
G. Borgeson, Jr.



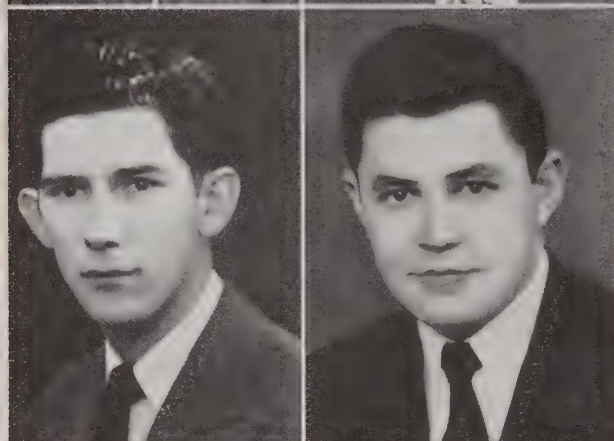
F. Tervo



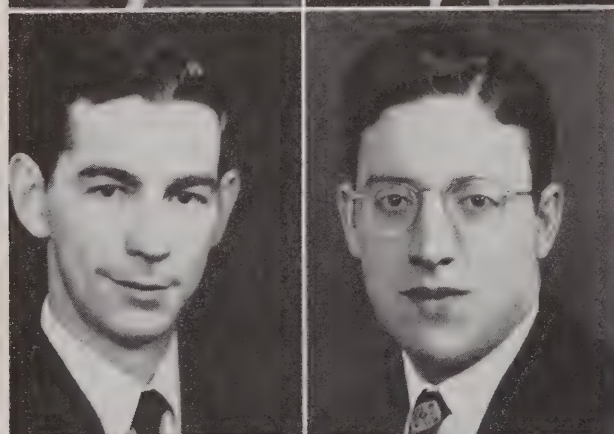
R. Burman  
J. Broecker



C. Salter  
A. Tinetti



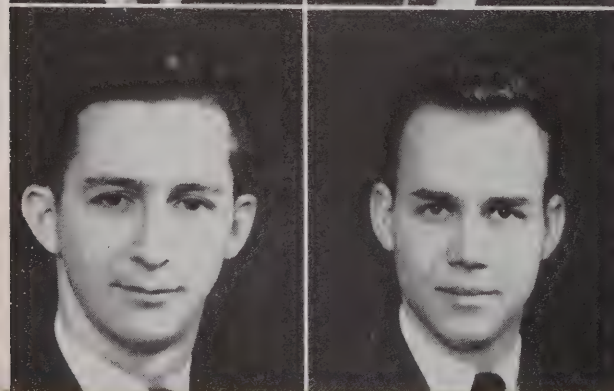
D. Greenawalt  
H. LaForet



R. Terracall  
L. Iannettoni, Jr.

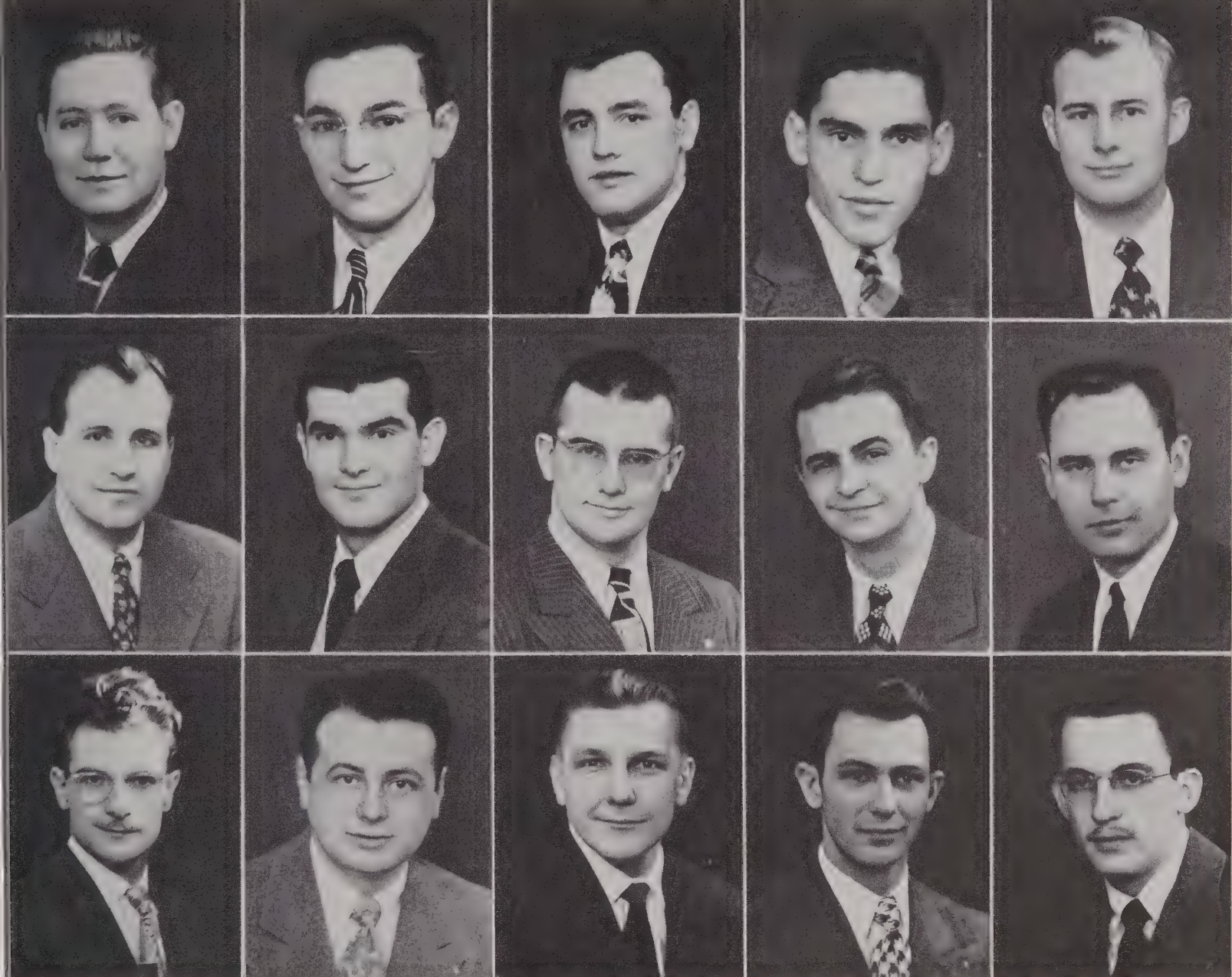


R. J. Smith



J. Ferrell, Jr.  
E. Swarens





N. Frank  
R. Gould  
B. Boisvert

J. Bodzin  
D. Schwalm  
J. Hickey Jr.

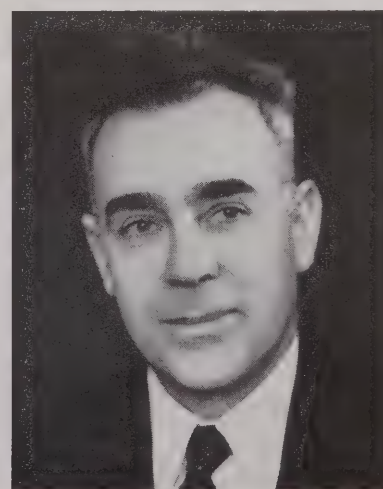
L. Adams  
T. Pinder  
R. Kust

W. Kvintus  
D. Grimm  
K. Kohler

S. Larsen  
C. Orciuch  
J. Russell



R. J. Marcotte



W. B. Gertz

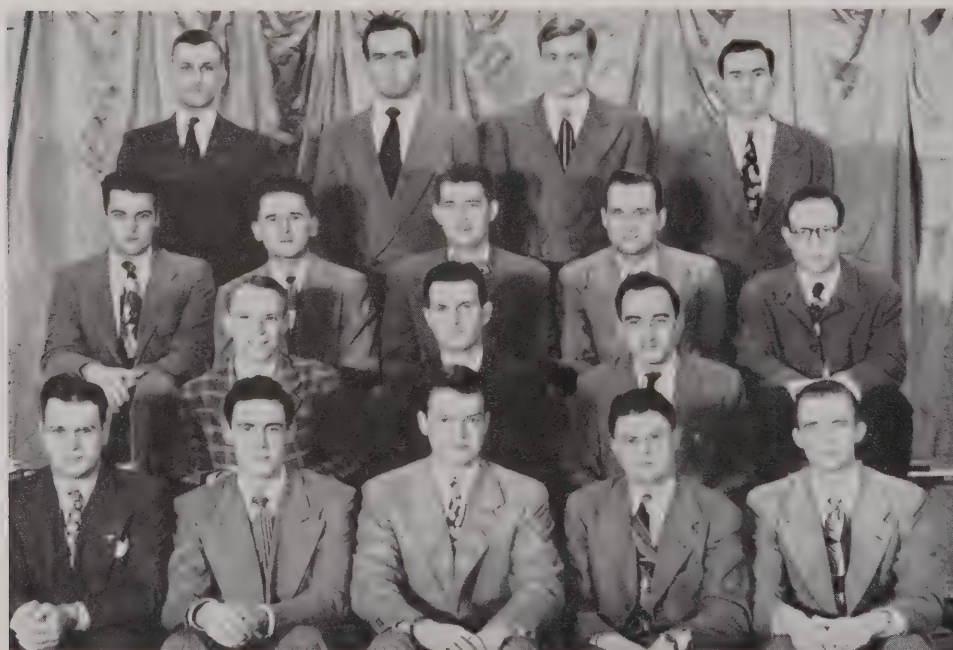


## SOPHOMORE METALLURGICAL ENGINEERS



FIRST ROW: Tait, Abel, Durfee, Bachand, Little. SECOND ROW: Vitton, Foules, Wolanski, Holstein, Hanzel. THIRD ROW: Ashfol, Hendrickson, Hansen, Groeneveld, Hlavacek, Butler.

## JUNIOR METALLURGICAL ENGINEERS



FIRST ROW K. Bomaster, R. Allemang, D. Williams, W. Sabin, J. Boonenberg. SECOND ROW: J. Walters, C. Webster, A. Herrault. THIRD ROW: A. McDonald, G. Christopher, E. Sutherland, H. Luetzow, H. Hoffman. FOURTH ROW: A. Nilsen, F. Mein, J. Nelson, E. Palowski.



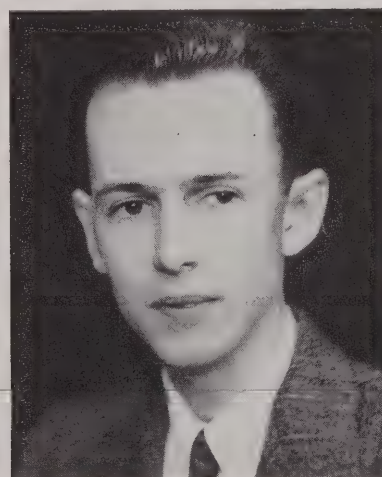
## FRESHMAN METALLURGICAL ENGINEERS



FIRST ROW: R. P. Sernka, Wm. J. Gigowski, R. G. Grant, J. H. Hamilton. SECOND ROW: E. W. Olson, M. A. Thery, R. C. Stanley, Nelson McRoberts.



Dr. R. W. Drier



R. L. Steveling





FIRST ROW: J. W. Hamb'len, D. J. Schwa'im, R. A. Derby, R. W. Berkhahn, R. H. Schnitzel. SECOND ROW: R. B. Terracall, D. G. Eberhardt, C. Orciuch, B. Lovell, W. W. Sabin. THIRD ROW: F. C. Wilson, C. B. Salter, L. J. Adams, A. G. Bernholdt, Jr., J. E. Vrugink, R. J. Donley, R. R. Wallace.

## ALPHA SIGMA MU

Alpha Sigma Mu is the national honorary metallurgical fraternity. Its Greek letters symbolize the Arts and Sciences of Metals. This fraternity was founded at the Michigan College of Mining and Technology in January, 1932, to recognize exemplary students and professional attainments in the field of metallurgy.

The Second World War interrupted the fraternity's growth. During 1947-1948, the organization was revised to meet changed conditions and to broaden its scope.

The fraternity has three purposes,—to recognize scholastic achievement among metallurgical students, to join its members in a common bond of professional interest, and to be of lasting benefit to its members and alumni. Eligibility for membership in Alpha Sigma Mu is limited to the upper third of the junior and senior classes enrolled in metallurgy and mineral dressing. Election to the fraternity is based upon character, personality and service.





FIRST ROW: W. T. Moore, R. H. Schnitzel, B. W. Boisvert, L. Iannettoni, J. S. Apostolina, J. K. Russell, C. C. Adier, G. W. Boyd, A. Schultz, H. Hoffman, C. Orciuch, R. B. Browning, J. E. Vrugink, S. J. Larsen. SECOND ROW: J. L. Walter, G. C. Christopher, A. C. Herrault, A. J. DeRubeis, R. W. Burman, J. I. Barbier, R. G. Lovell, R. D. Burge, F. C. Wilson, N. A. Frank, D. E. Grimm, Z. R. Wolanski, A. W. Schjonberg. THIRD ROW: H. B. Sauder, M. Gittleman, J. J. Broecker, E. W. Swarens, J. W. Hamblen, C. W. Webster, F. A. Meyn, C. M. Walker, R. G. Grant, J. H. Hamilton, N. L. McRoberts, R. P. Sernka. FOURTH ROW: C. M. Eberhardt, J. Simons, R. J. Donley, H. T. Anderson, A. E. Nilsen, D. E. Holstein, C. Hlavacek, E. C. Sutherland, J. J. Bodzin, A. G. McDonald. FIFTH ROW: K. Johnson, P. E. Nelson, R. S. Bietz, D. J. Schwalm, D. G. McCullough, C. B. Salter, E. Bartlett, W. Johnson.

## AMERICAN SOCIETY FOR METALS

Since its founding in 1936, the American Society for Metals has endeavored to increase the knowledge of its members on the manufacture and treatment of metals. In addition, the meetings of the chapter give the student the necessary social contact to the engineer.

A complete reorganization of the administrative machinery featured the activities of the Michigan Tech Chapter of the society during the past year. It had been noted that the ever widening scope of the ASM had placed too great a burden on its administrative officers. In the spring term, 1948, the members voted for reorganization.

Put into effect at the beginning of the following fall term, the new system proved very efficient. It gave greater flexibility and was instrumental in improving the functioning of the society. The duties of both the president and vice-president were detailed, and several standing committees were appointed to cope with specific problems as they arose.

Assured of a smoothly operating organization, the ASM is prepared for more active participation in student activities, the Winter Carnival, and social contact between the members of the society.







The  
Department of  
**MINERAL  
DRESSING**







N. H. MANDERFIELD

Professor Manderfield was born in Hubbell, Michigan on March 25, 1900.

He received a B.S. degree at Michigan College of Mines in 1921 and a degree in Metallurgical Engineering from the same school in 1925.

From 1923-24 he was a research engineer for the Anaconda Copper Company. In 1925 he became Associated Professor of Metallurgy and Ore Dressing; until 1935 when he became the professor and head of the department.

In 1940 when the new Mineral Dressing department was formed professor Manderfield was appointed head.

The Professor belongs to the Engineering Education, and Mining and Metallurgical Engineering Associations, as well as the Lake States Mining Institution.

He has been the author of a number of private consulting reports as well as several made public. Notable of these are "Low Grade Ore of Michigan Iron Districts," "Native Copper Ore Dressing," and his latest, which is co-authored with Messrs. Tolonen and Jasberg, is "Concentration Characteristics of the Low Grade Iron Ores of Michigan."

## MINERAL DRESSING

In the beginning there were no mineral dressers. As time went on, however, some of the men felt that making little ones out of big ones could be reduced to a science. The whole world agreed to this, easily seeing that this would be easier than making big ones out of little ones.

Finally, mineral dressing came to Michigan Tech. There it was given its own department, allowed to grant degrees, and then kicked down into the basement of McNair Hall. Ever since, students have disappeared into the depths only to appear four years later their eyes glowing with knowledge and their clothes smeiling of pine oil.

Typically the miner comes up from the ground, heaves large piles of rocks of various sizes and dimensions at the mineral dresser, and departs. The latter now has the choice of crushing, or grinding, or any of the other things that is common practice, in order to come up with something better than he

started with. And all the while keeping the miner on one end and the metallurgist on the other, pleased with the job. And the thought enters his head, "Why didn't I go to that liberal arts school."

Sprinkling the crushed ore with exotic smelling reagents, the engineer boils and bubbles the ore. Bubbles float in the air around the flotation machines making everything rather moist in the process. Wheels whirl, whistles blow, and out comes the finished concentrate. All that remains is to figure where to dump the worthless material that made up ninety-nine per cent of the original.

Industry rolls on, confident that the raw materials so necessary to its existence will be supplied. The world of business knows that the ore of the great ranges will be taken from the earth and processed into concentrations suitable for modern furnaces. For the mineral dresser is at work—in the mills, in the laboratories, and . . . in the basement of McNair Hall.





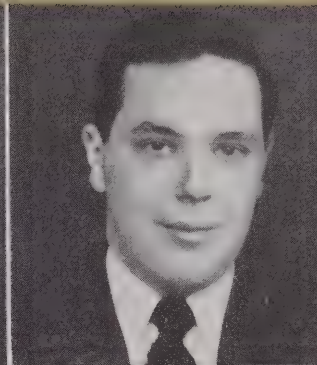
R. Berkhahn



A. McKean



R. Derby



F. Goodyear  
C. Bjorne



K. Olson  
R. Livingston



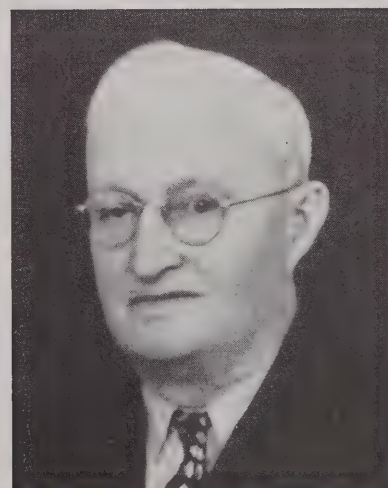
F. Tolonen



E. Cahoon

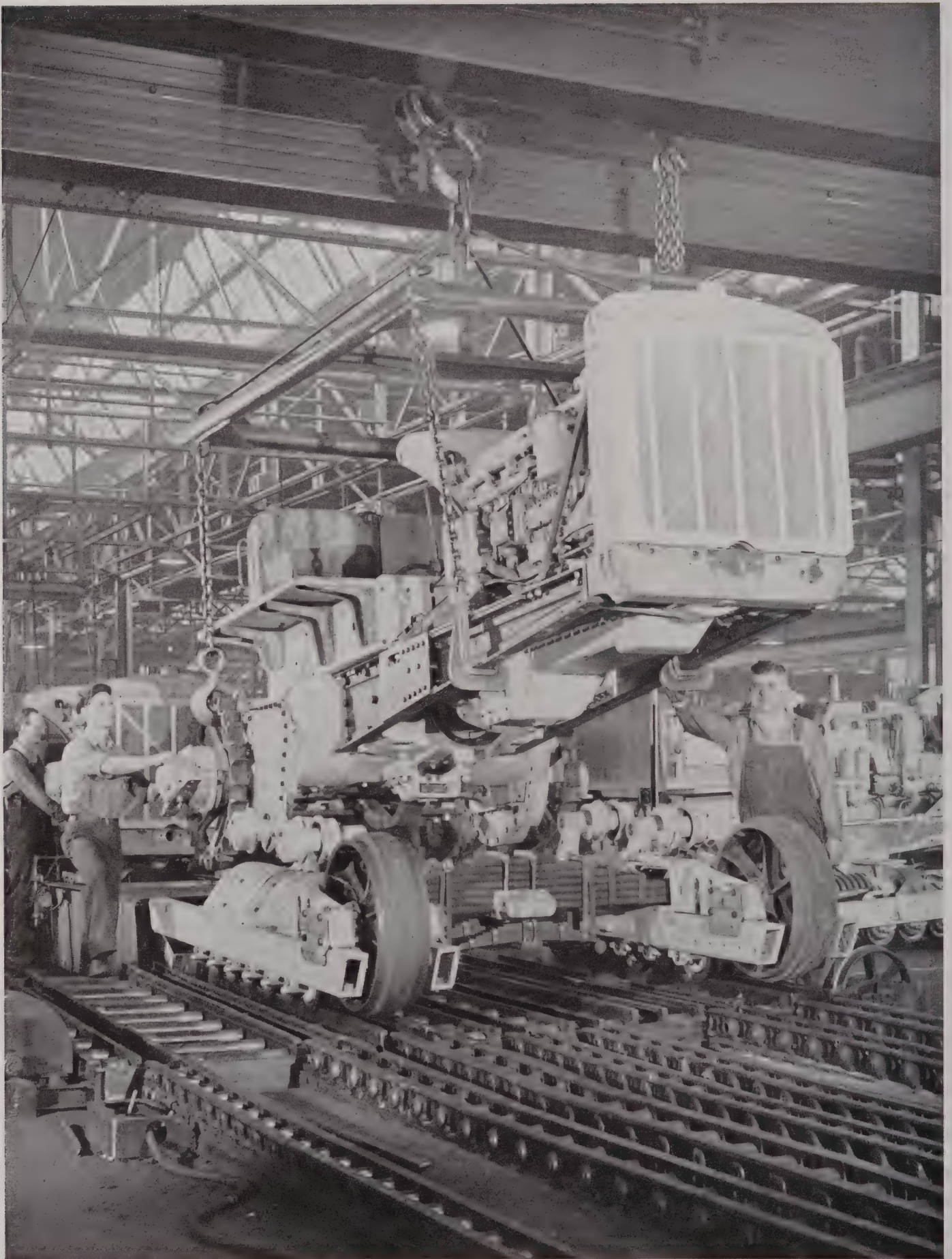


W. E. Keck



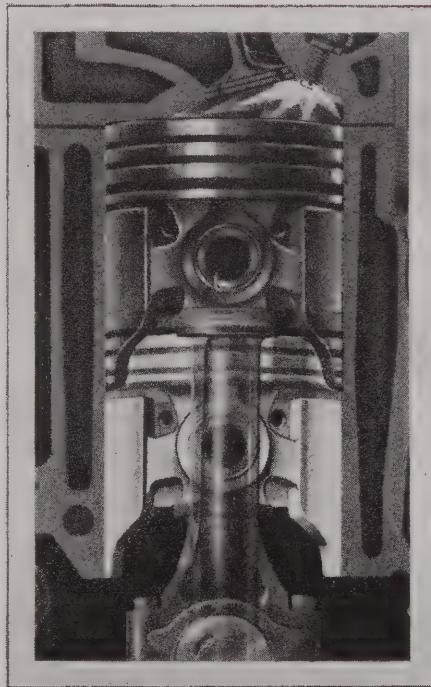
E. Sullivan







The  
Department of  
**MECHANICAL  
ENGINEERING**





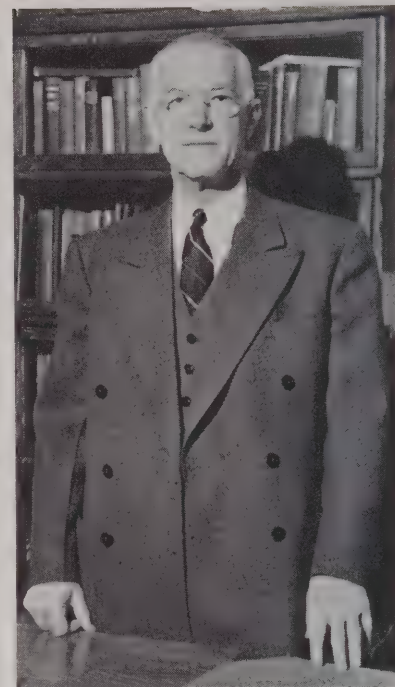


A. P. YOUNG

Professor A. P. Young was appointed Head of the Department of Mechanical Engineering, succeeding Dr. R. R. Seeber who retired on July 1, 1948 after heading the department since 1926.

Professor Young is a graduate of Purdue University and holds the B.S. and M.E. Degrees from that institution. Prior to his joining the Michigan College of Mining and Technology Faculty Staff in 1930, he was employed for six years as manager of the Nadiad Industrial Institute of Nadiad, India.

Professor Young holds membership in the American Society of Mechanical Engineers, the American Welding Society and the Society for the Advancement of Engineering Education. His social clubs include the American Legion, Tau Beta Pi fraternity, and Scabbard and Blade. He is also the author of numerous engineering research articles.



R. R. Seeber

## MECHANICAL ENGINEERING

The average young American is traditionally mechanically inclined. From the first watch he takes apart to the time he decides to overhaul the family car, he is always puttering with gadgets. The average family, tired of paying for the years of sustained damage, finally decides to turn this energy into useful channels and send their boy to Houghton. And another student mechanical engineer joins the ranks of those who come to try.

The home of the mechanical engineer is the large building on the east of the campus. Here the student drinks in knowledge along with a little carbon monoxide from the engines in the lab. His first courses teach him steam, failures, and all manner of necessary evils. At last he makes the choice of option. Automotive, power, or air conditioning are the offerings.

The automotive major quickly finds out that all is not road testing '49 models in his courses. But, cheerfully adjusting to his chosen profession, the embryo engineer diligently pursues knowledge. With his degree clutched in his hand he strides forth

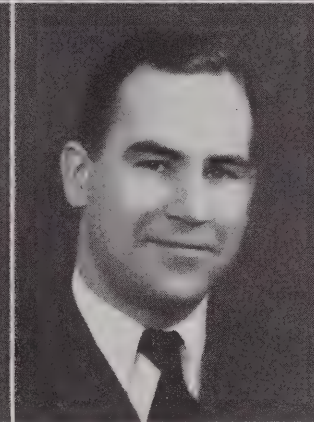
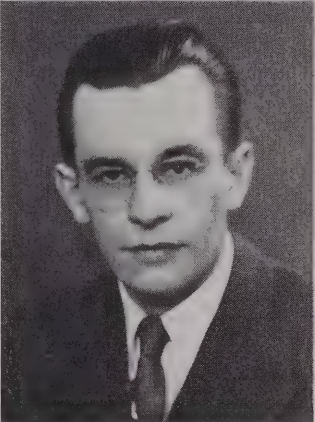
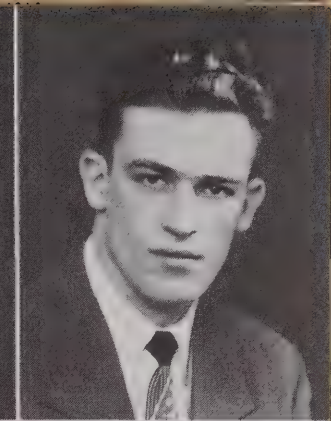
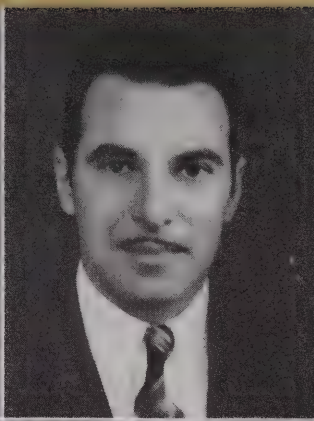
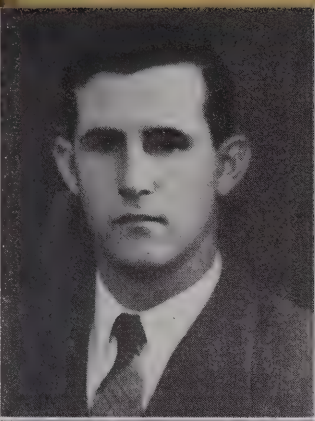
proudly from graduation. Here is a man who can grease cars and fill gas tanks with the best of them.

Or, there is always the air conditioning option. The dark secret of this study is revealed only to the senior in his last term. "When it grows stuffy inside, ... open a window. Or if really scientifically inclined, open two windows!"

Some men take the third option. Some of them are consistently drunk with power. This isn't a prerequisite, but it helps. Of course, this isn't restricted to the mechanicals. The power men do deserve their title of best dressed men on the campus. Getting close to all that steam, their clothes have that freshly laundered look.

This largest group at the school are an inspiration to their fellow students. Everyone has to take the elementary "M" courses, but these are the only ones who have the courage to take the rest. Or is it courage? Maybe its the vision of the future. For deep in the heart of the most of the mechanical engineers is the image of their forthcoming success. Their own garage.





K. Main  
G. Lundin, Jr.

R. Karpinen  
S. Stanaway

G. Freeman  
J. Rovano

R. Woelk  
D. Kariniemi

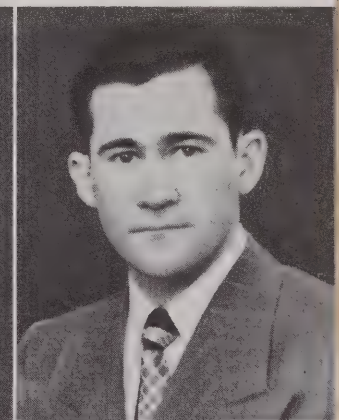
H. Barber  
F. Kleimola



G. Schubert

B. Ludowise  
H. Pollari

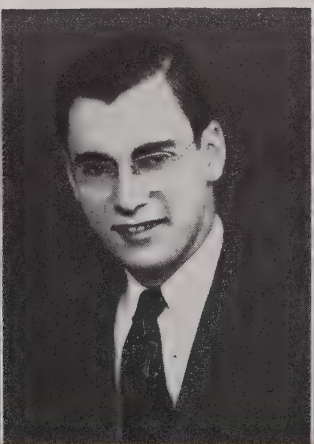
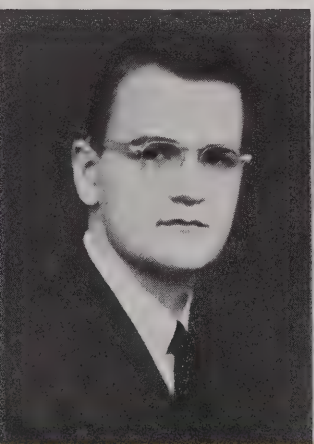
A. Jarema  
V. Stuckey



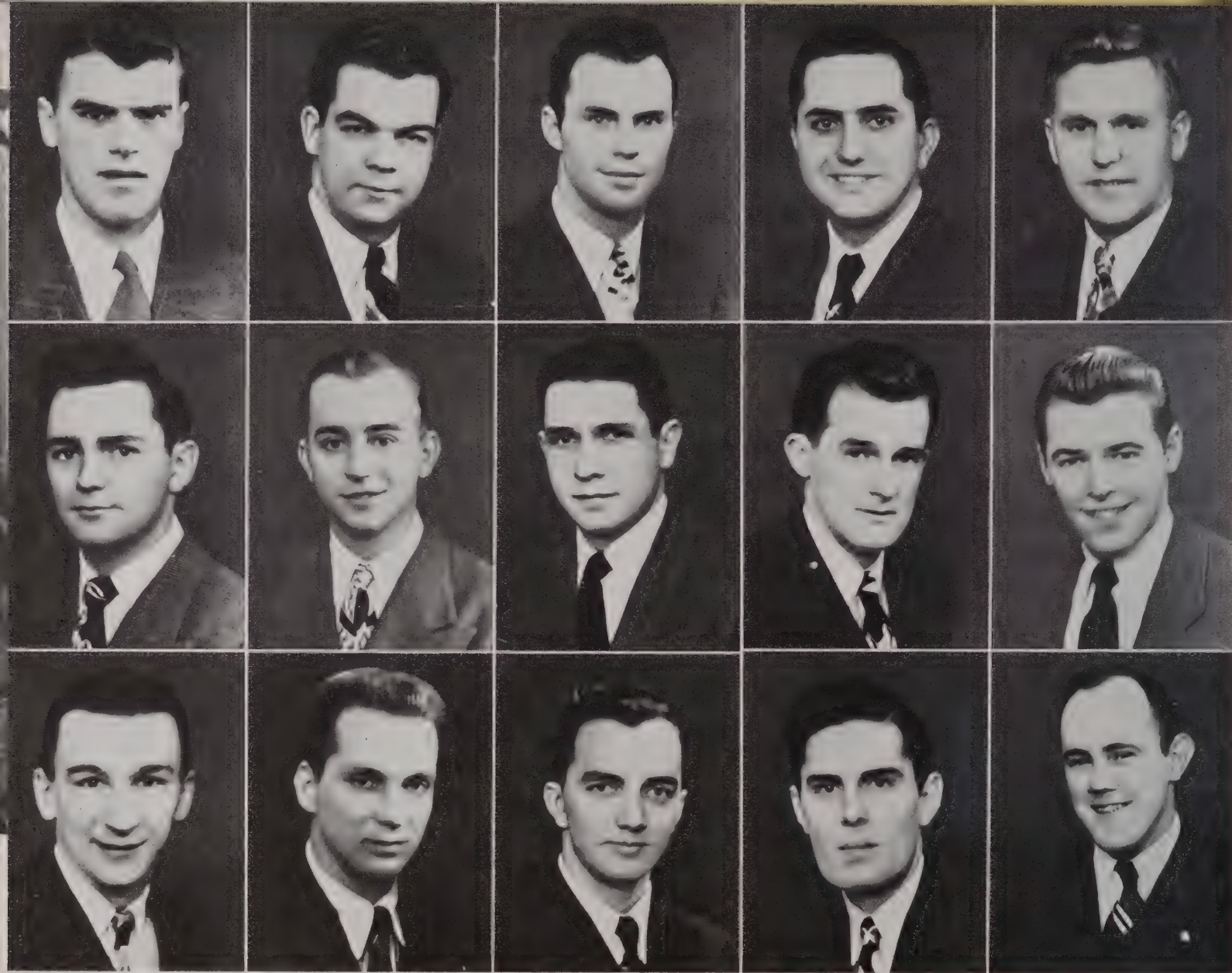
R. Kinnunen

R. Kass

E. Nicholls







R. Strom  
E. Weber  
B. Musich

C. Sleeman  
L. Meyer  
G. Evans, Jr.

R. Rutka  
R. Nelson  
A. Hill

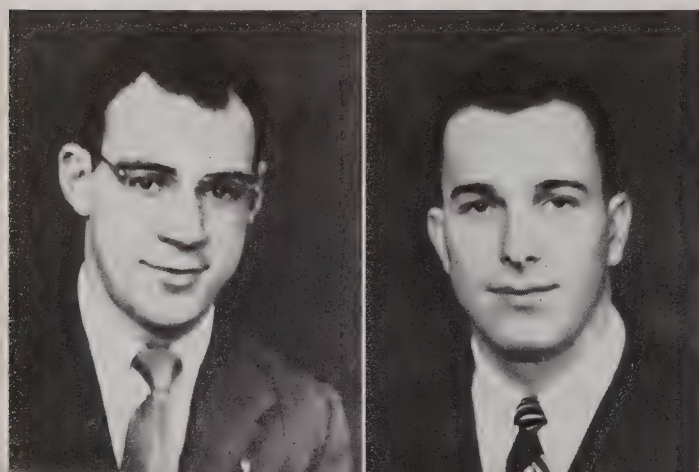
W. Bero, Jr.  
E. Pennanen  
T. Franey

D. Kuhna  
R. Woodbridge, Jr.  
E. Glaser

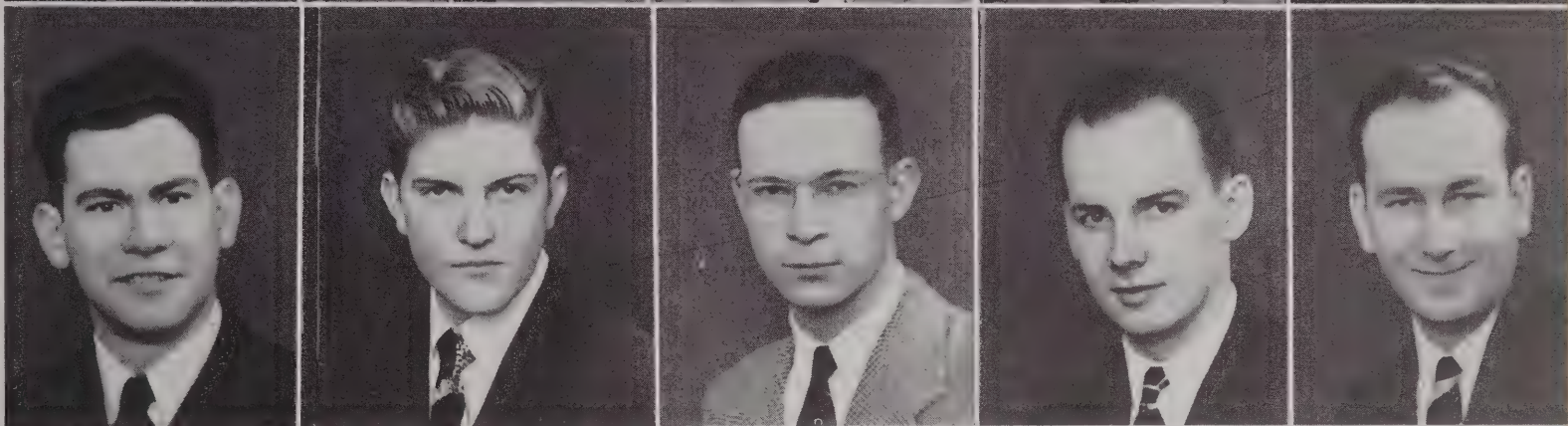
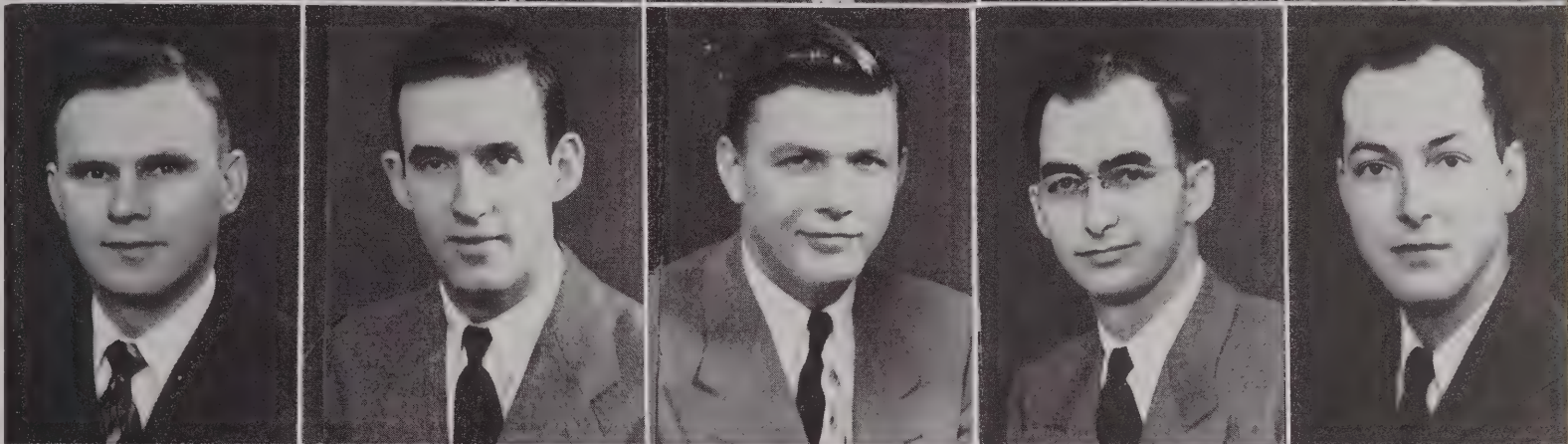
R. Birmingham

H. Cosson

H. W. Hawn







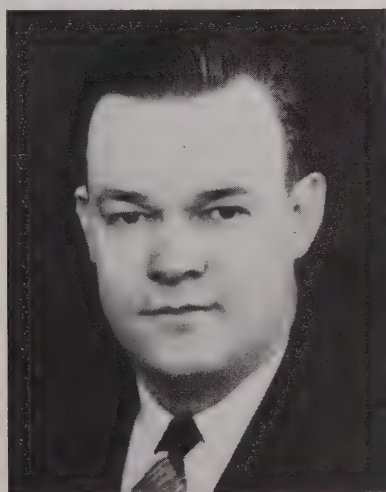
R. DeGhetto  
C. Golueke  
R. Alkema

J. Glaser  
R. Mead  
J. Blom

C. Haspelmath  
E. Pratt  
W. McFarland

J. Hangeland  
E. Anderson  
J. Gronseth

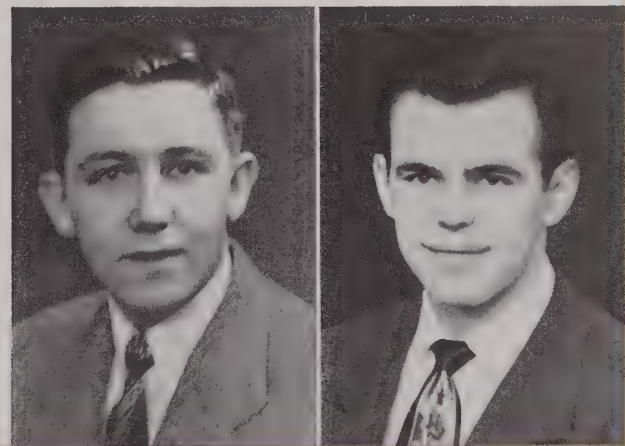
L. Fry  
D. Melhuish  
L. Arducant



E. W. Niemi

J. Hogstad

J. Deli







W. Jacobs  
P. Johnson

J. Vittone  
F. Reed

W. Tschantz  
R. Nelson

R. Randolph  
K. Nault

L. English  
J. Wilman



F. E. Wittig

R. Kwiatkowski  
R. Melson

A. Hamalainen  
L. Quello



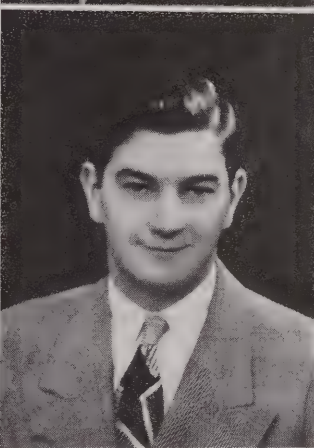
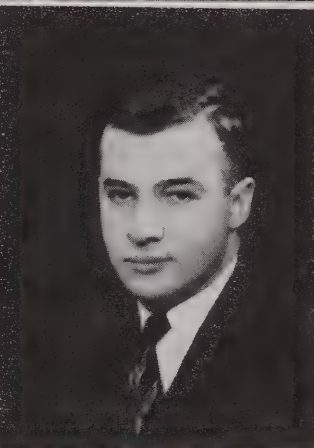
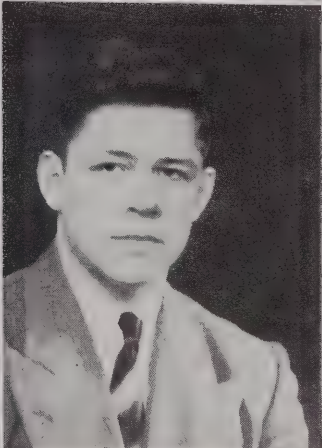
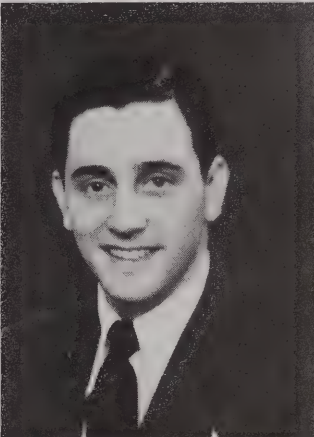
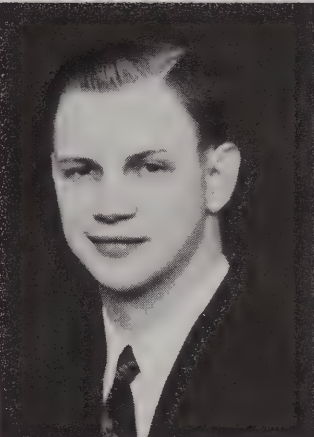
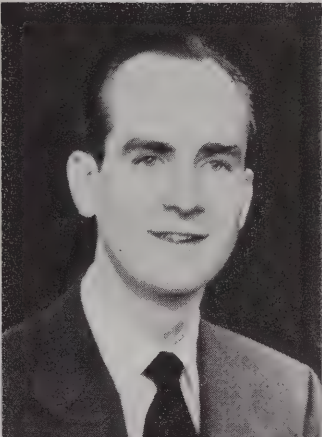
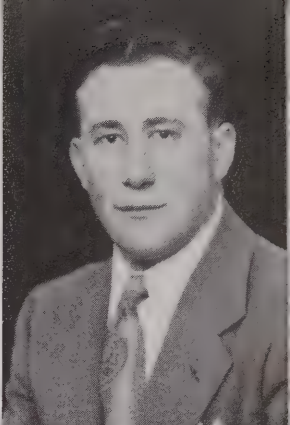
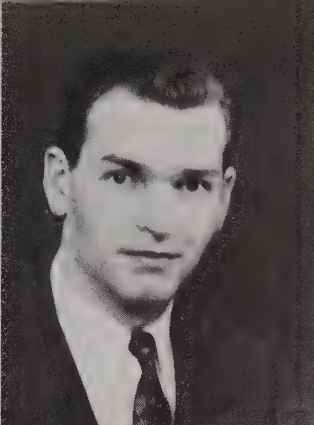
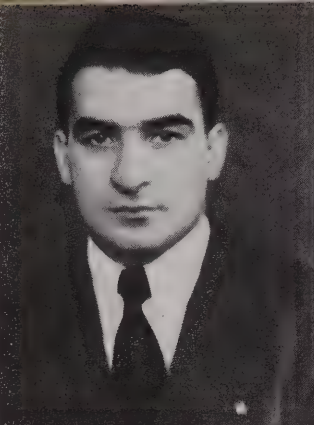
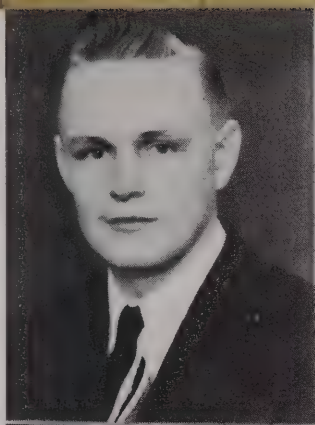
C. Byrnes

K. Miller

L. Quello







C. Olson  
R. Kessler  
C. Sorensen

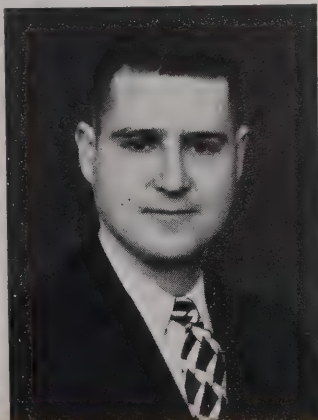
K. Beaudoin  
D. Scanlan  
J. Page

P. Roberts  
T. Atkin  
P. Balconi

R. Quayle  
J. Keir  
G. Otto

A. McNay  
C. Sperry  
C. Heikkinen

J. Dobbins



R. R. Hagen







H. C. Hamilton



Thomas Cocking

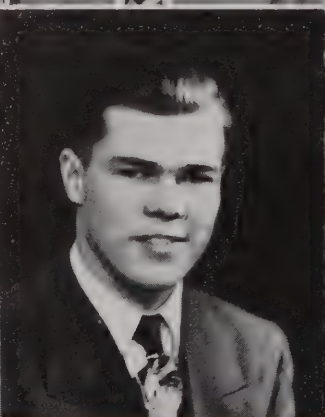
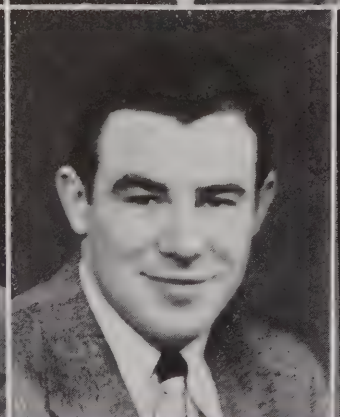
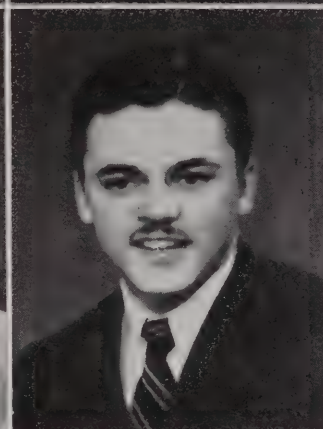
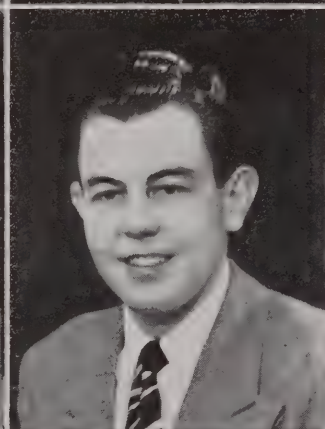
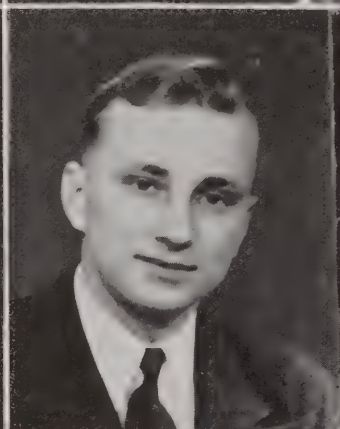
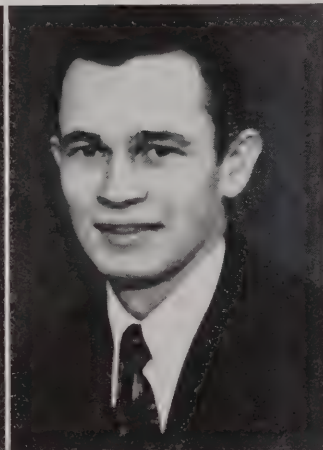
R. Penman  
G. Mattson  
A. Boorman

W. Shepeck  
W. Niemi  
R. Roberts

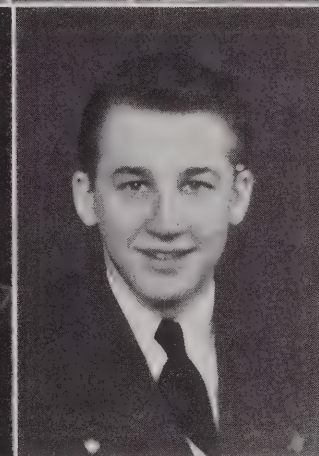
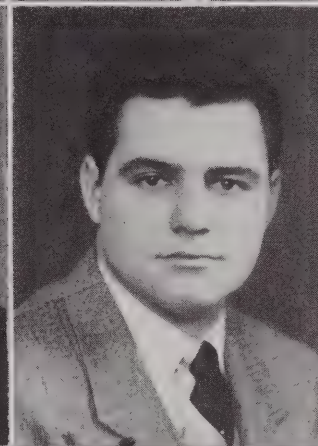
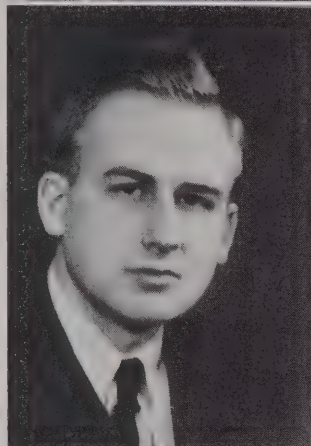
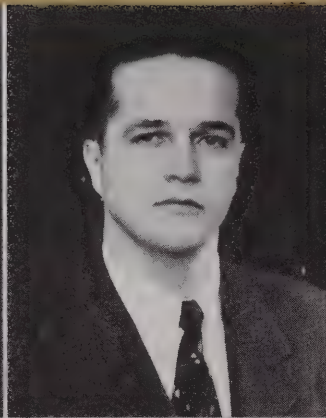
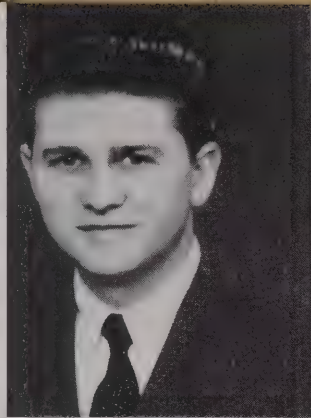
M. Josephson  
C. Peck  
R. Mackey

P. Kivari  
A. Henry  
C. Dragicevich

R. Matheson  
C. Szpieg  
J. Mickelsen







E. See  
C. Cox  
J. Mills

D. Yeadon  
A. Martti  
J. Montvedas

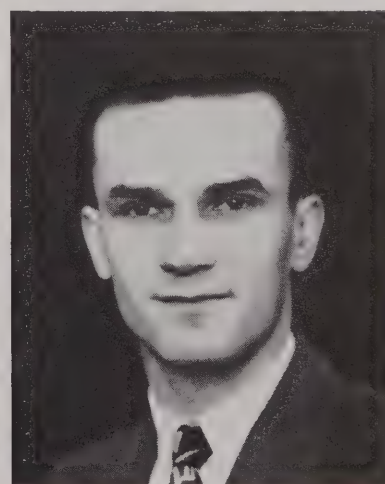
J. Lang  
E. Steeger  
W. Kargela

R. Cornish  
R. Neubacher  
M. LaLuzerne

E. Dionne  
A. Latva  
K. Kositzky

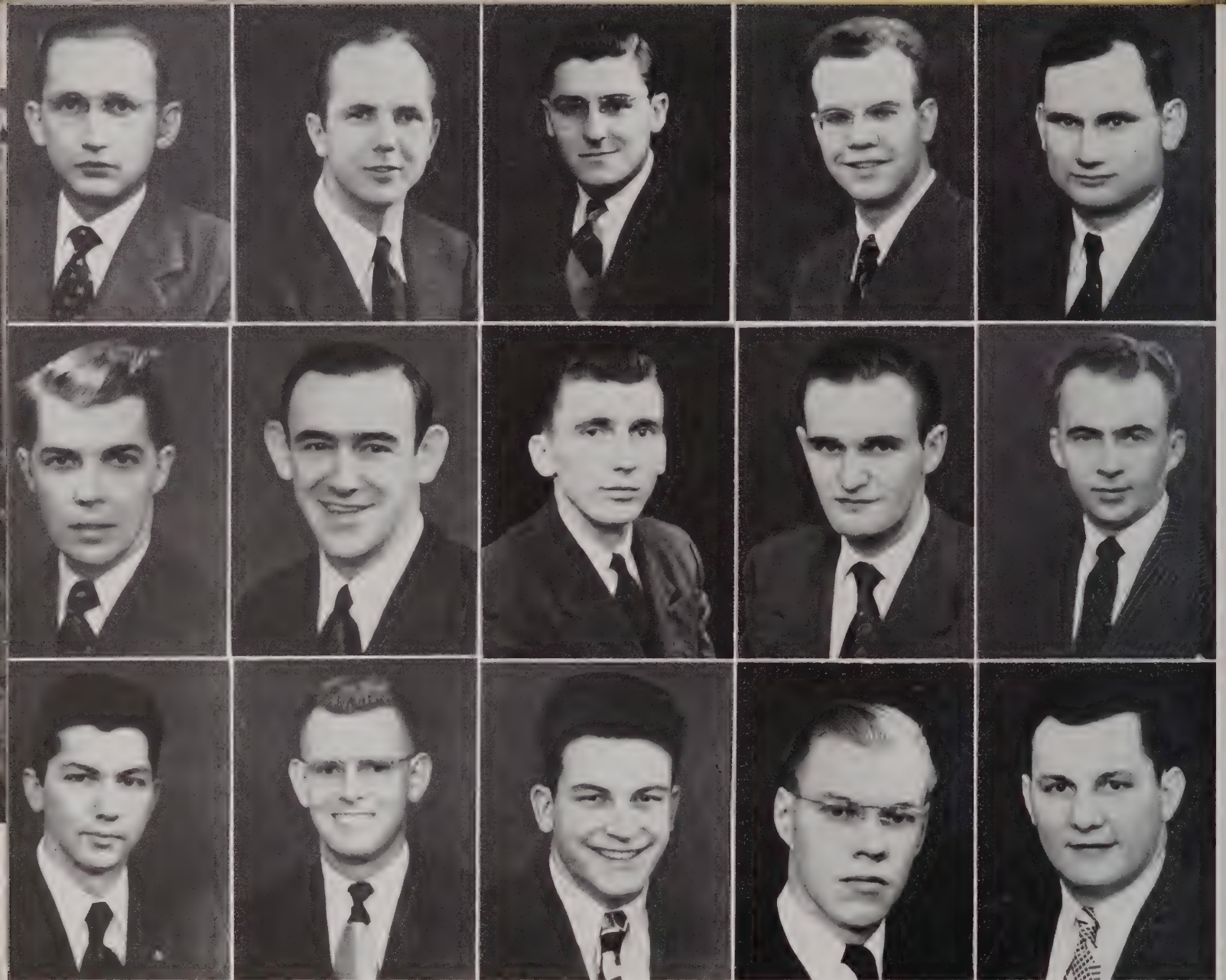


P. I. Koski



Richard Bayer





K. Arntzen  
R. Johnson  
R. Jacques

G. Lempio  
J. Haun  
W. Ringler

W. Crothers  
E. Backman  
G. Quayle, Jr.

W. Bush  
L. Kivisto  
E. Matson

C. Halstead  
C. Benson  
V. Yerebeck



W. Opie



G. A. Hellman



## JUNIOR MECHANICAL ENGINEERS



FIRST ROW: Eckhoff, Marcella, Gutowski, Johnson, Hoehner, Round, Fries, Stocker, Pladna, Braun. SECOND ROW: Nacke, Rasmussen, Bonema, Leow, Stauffer, Thomas. THIRD ROW: Fourt, Reinhardt, Kivimaki, Gregorich, Arbogast, Wright. FOURTH ROW: Anderson, Risteen, Melvin, Kimball, Veldman, Miller, Munson.

## SOPHOMORE MECHANICAL ENGINEERS



FIRST ROW: J. L. Jenkin, H. F. Christensen, G. L. Weaver, B. A. Jorgensen, J. C. Linton, M. R. Martin, G. C. Wilson. SECOND ROW: J. Stencel, D. Cardoze, M. Johns, R. Anderson, G. C. Carver, J. R. Turunen. THIRD ROW: J. Gottwald, P. F. Segor, F. Delgado, R. Melvin, W. J. Dougherty, H. F. Eaton, R. G. Ruffe, M. McGowna.



# FRESHMAN MECHANICAL ENGINEERS



FIRST ROW: R. N. Erkkila, H. Sanborn, Jr., H. W. Gray, B. M. Kemppainen. SECOND ROW: C. Wendel, P. L. Erickson, D. M. Gerkey, J. W. Jamar, D. H. Wacker. THIRD ROW: R. B. Hostetter, Wm. Prasse, J. F. Curry, Wm. D. Horton, D. E. Williams.

## A. S. M. E.



FIRST ROW: J. Avaiusini, E. Pratt, P. G. Roberts, S. Stanaway, V. Studkey, Wm. M. Miller, J. C. Linton, Wm. J. Lux, H. M. Pollari, S. Yerebeck, J. Curry, A. A. Gutowski. SECOND ROW: F. M. Thomas, C. J. Szpieg, Wm. J. DeGhetto, J. Mills, C. E. Cox, L. E. Kirimaki, R. Anderson, H. Mikulich, H. Rolka, W. J. Clifford, D. Wacker. THIRD ROW: C. R. Byrnes, G. K. Otio, F. L. Tabor, R. A. Kwiatkowski, R. W. Strom, R. D. Rutka, W. J. Dougherty, G. C. Wilson, J. F. Loss, B. A. Jorgensen. FOURTH ROW: C. R. Halstead, Wm. McFarland, G. E. Wanttaja, G. C. Carver, C. A. Golueke, D. A. Makikuhna, K. H. Miller, P. F. Segor, J. E. Peddicord, R. C. Ames, J. S. Scott. FIFTH ROW: F. H. Liesong, P. E. Frusti, R. A. Parker, A. J. Karvonen, D. S. Malhuish, C. Sperry, J. W. Wilman, A. E. Woizeschke.





FIRST ROW: E. J. Glaser, J. R. Glaser, R. J. Birmingham, K. H. Beaudoin, M. Veldman, R. J. Woelk, Prof. A. P. Young, J. A. Round, F. Reed, D. Scanlan, L. G. Peadar, Wm. T. Harvey. SECOND ROW: H. Lombard, A. W. Newton, L. G. Munson, K. A. Mulholland, Wm. J. Glidden, Wm. R. Johnson, A. J. Bentley, Wm. Prasse, J. F. Peterson, W. Tschantz, P. F. Johnson, H. F. Eaton. THIRD ROW: C. C. Jackson, H. K. Barte, L. D. Eckhoff, F. J. Marcella, A. J. Hogan, R. A. Jacques, R. A. Kass, G. H. Lempio, Wm. D. Motzny, T. A. Atkin, W. H. Reinhardt. FOURTH ROW: R. W. Karry, P. A. Lindberg, R. G. Ruffe, J. A. Galicki, Wm. Horton, K. F. Nacke, R. J. Pearce, R. Poppe, N. Bonema. FIFTH ROW: G. Johnson, E. G. Steeger, J. D. Lang, M. Cross, R. E. Besemer, R. J. Rasmussen.

## AMERICAN SOCIETY OF MECHANICAL ENGINEERS

The student chapter of the American Society of Mechanical Engineers at Michigan Tech endeavors to acquaint its members with the spirit and ethics of the engineering profession. Under the supervision of faculty advisor Professor A. P. Young and chairman Martin Veldman the members were furnished with a program of planned technical movies and

talks. These meetings helped to bring the student mechanical engineers of all classes together.

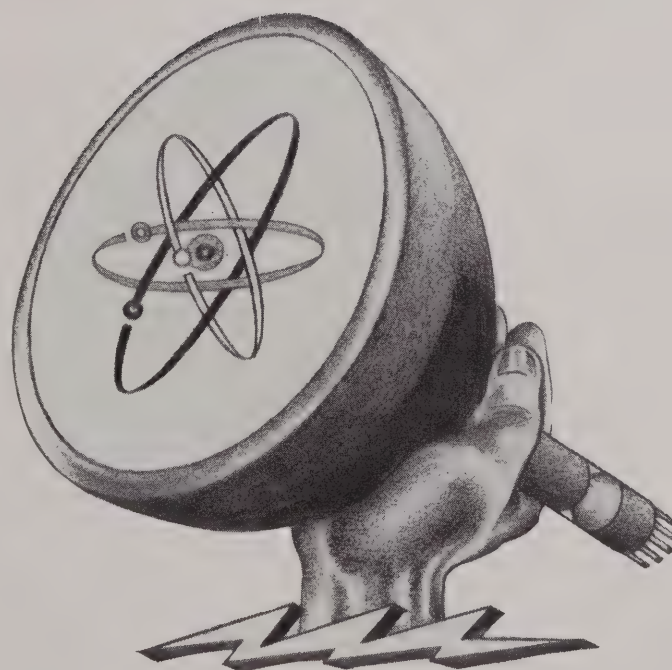
The society takes an active part in the Winter Carnival each year. The projects undertaken in the various events help to develop a sense of leadership and responsibility so necessary to the engineer. The chapter provides its members with a well-balanced program of information, education, and amusement.







The  
Department of  
**ENGINEERING  
PHYSICS**







T. C. SERMON

Associate Professor T. C. Sermon, successor to Dr. J. H. Service, heads the Department of Physics.

Professor Sermon attended Central State Teachers' College, Mt. Pleasant, Michigan, receiving the A.B. Degree from that institution, and acquired his B.S. and M.S. Degrees at Michigan Tech.

He has carried on extensive research work in the field of geophysics, and is also the author of numerous articles which have been published in technical journals.

He holds membership in engineering and physics societies and is a member of Sigma Rho Fraternity and Faculty Advisor for the Michigan Tech Chapter of that Fraternity. His social memberships also include the Masonic Order and the Fortnightly Club.

## ENGINEERING PHYSICS

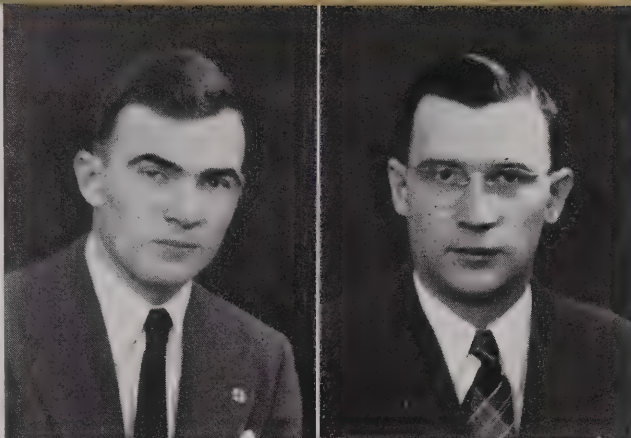
Ever since Los Alamos, Hiroshima, and some of those other places, the physicist has been coming up in the world. Here's the man who has moved out of the laboratory into the front offices of the government. Just a few short years ago his responsibility consisted of seeing that all the high school students did their experiments fairly. Now he drops a flask or makes a mistake, and one of our cities is missing. To get all these foulups out of his system, the student physicist comes to Tech.

The usual run of men sigh with relief upon completing that last term of general physics. But the physicist, being a glutton for punishment, signs up for more. The years are spent pursuing x-rays, gamma-rays, beta-rays, and so on, down the greek alphabet. The big thing to watch is not to stand too close to the experiments. Where do you think those two-headed men on the campus came from?

It's rumored that the last problem of the physicist or engineering physicist during his senior year is to make his own atom bomb. Off our man goes down to the top-secret lab down at the last level in the Quincy mine. There, surrounded by chattering Geiger counters, he works. Finally, he hands the finished product into his instructors. If the professor, and the building, are still there by the next day, the student flunks...

The average physicist has no trouble securing a job. The government snaps them up for secret work as soon as the men are graduated. As they disappear into the dark recesses of the high-walled plant, their friends and classmates wave fond farewell to them. The massive door clicks shut and the heavy bolts lock into place. These great-hearted boys who spent four happy years with us, and then disappeared forever ... like Uncle George who went up the river...

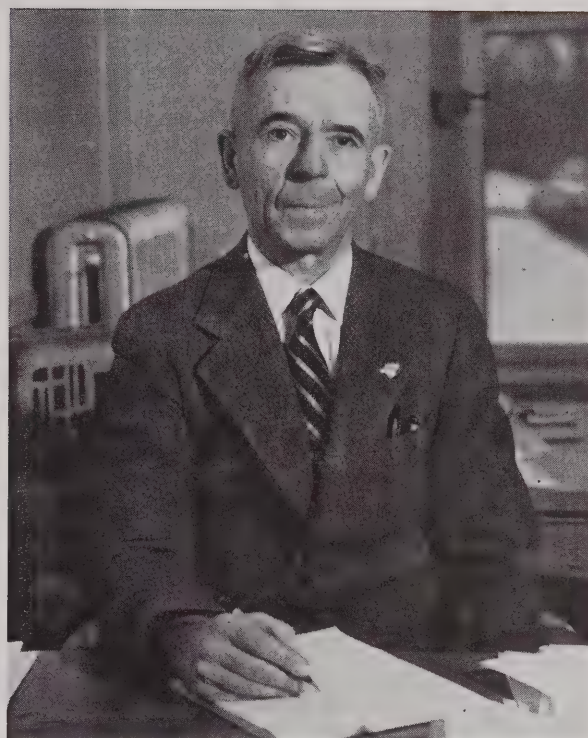




J. Erwin  
D. Bishop



G. Miatech  
R. Lindgren



Dr. Jerry H. Service



W. A. Longacre

C. Ahlstrom

P. Shandley



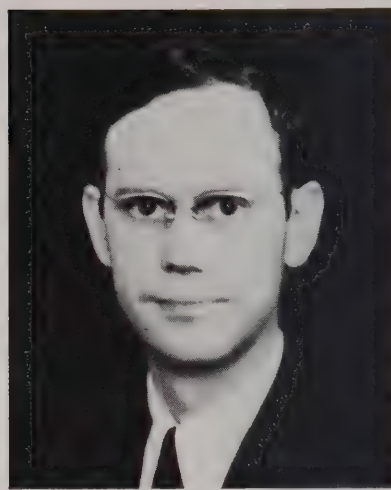




C. J. Pratt



R. A. Janke



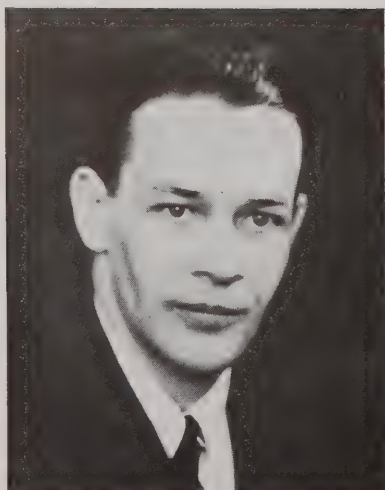
P. R. Hinzmann



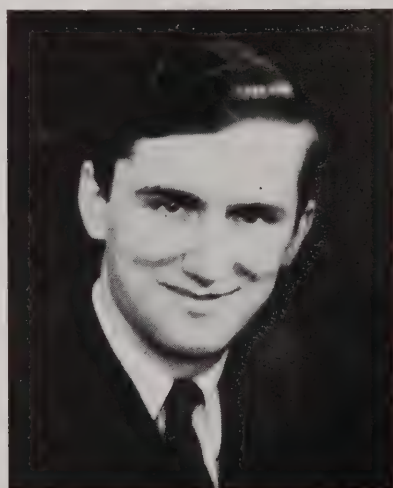
Dr. H. M. Schillbach



D. O. Wyble



M. L. Coon



D. F. Chimino



W. F. Gilbert





FIRST ROW: D. Bishop, P. Shandley, G. Miatech. SECOND ROW: P. Jansen, J. Evans, P. Goode.  
THIRD ROW: T. Griffith, R. Lindgren, R. Karry, G. Stanley.

## MICHIGAN TECH PHYSICAL SOCIETY

The Michigan Tech Physical Society is a new addition to the professional organizations on campus. It was formed in the spring term of 1948 to meet the needs and interests of the increasing number of physics and engineering physics students. To fulfill this aim the group seeks to stimulate interest and discussion in the broadening field of physics through student demonstrations, movies, and talks by outside

speakers. It provides an opportunity for interested students and faculty members to meet together socially and informally.

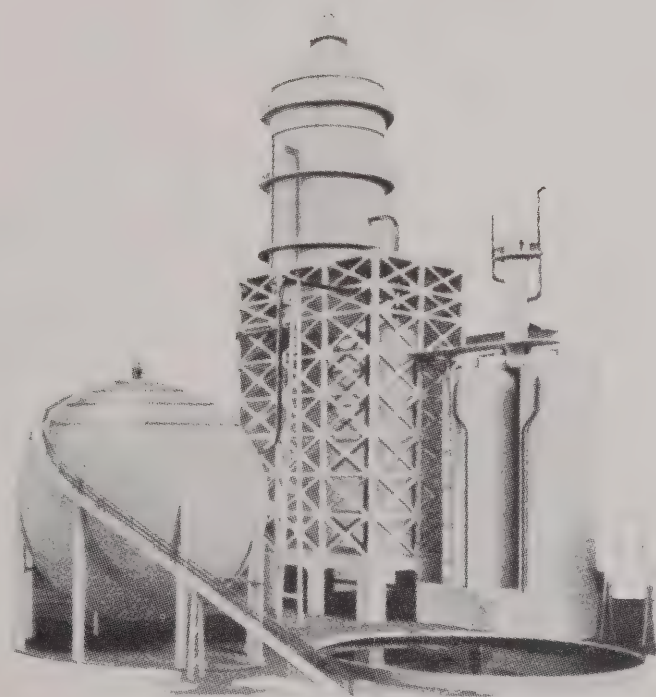
Although at present there is no opportunity for organization to affiliate with any of the professional physics organizations, the individual members are encouraged to join the American Society of Physics Teachers as junior members.







The  
Departments of  
**CHEMISTRY and  
CHEMICAL  
ENGINEERING**







DR. H. L. COLES

Professor and Head of the Department of Chemistry and Chemical Engineering, Dr. Henry L. Coles was appointed as successor to Dr. C. M. Carson in 1940 who retired at that time.

Dr. Coles received his B.S. and Ph.D. degrees from Ohio State University and his Ch.E. and M.S. degrees from Rose Polytechnic Institute. Dr. Coles formerly headed the Department of Chemical and Metallurgical Engineering at the University of Alabama, engaging in consulting work at that time.

The author of two books and numerous articles in scientific and technical publications, Dr. Coles holds numerous patents in the fields of chemistry which were much used during World War II.

Dr. Coles is a member of a number of chemical societies and is listed in "The American Men of Science"; "Who's Who in America" and "Chemical Who's Who" and holds professional engineer's licenses in the States of Michigan and New York.

## CHEMISTRY AND CHEMICAL ENGINEERING

In high school, chemistry seemed designed to keep the student amused during the short lab hours. What fun to brew up some hydrogen and touch a match to it. Or heat mercuric oxide to get the metal. No reports or questions, something good to pick up a couple of hours. Things seemed to have changed somewhere between there and college.

The big thing in that first chemistry year or two was what is it? how much? and the usual why? Of course, the reactions were very pretty, but the odor. Well, some of the more hardy, or those with continual colds, decided to follow the thing through.

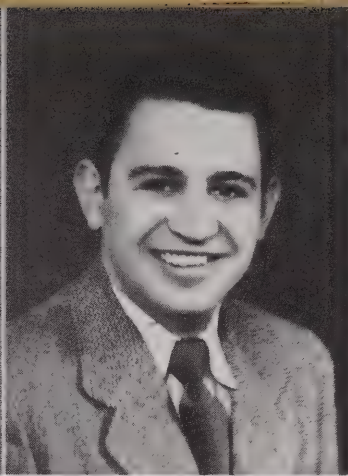
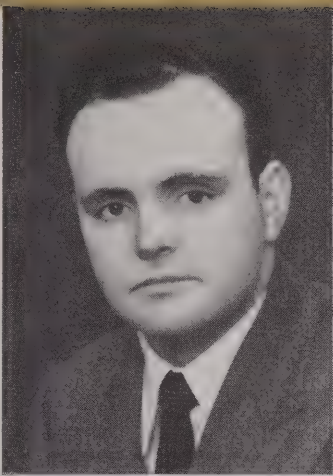
The chemist comes the closest to the old alchemist who spent his lifetime finding out that he couldn't change lead into gold. The student brews and puts his way through four years, acquiring a degree and a strong stomach. Then if he or she hasn't

breathed too much  $H_2S$ , they are let loose on industry.

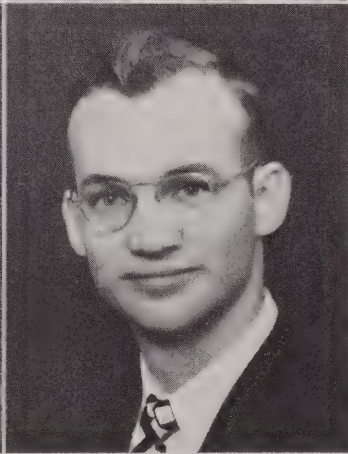
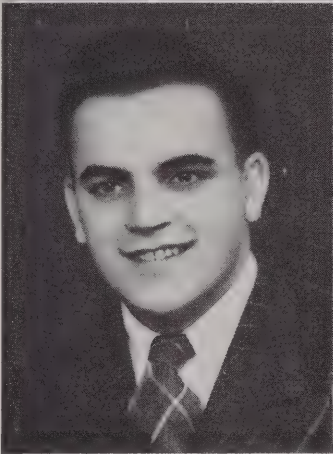
Around the time that the last unknown comes back rejected, some of the chemists decide to take to the industrial side of the profession. Here are the potential DuPonts of the future. The chem engineers figure out the new plants and machinery that will turn out the sheer stockings or the miracle drugs of modern science. And might even come up with Scotch made from coal, air, and water. But this is dreaming...

And so it goes. Koenig Hall bustles with activity from eight in the morning till five at night. Spectroscopes are flashing on and off, blue litmus is turning red; and all the while the unconscious student body walks by, little dreaming what wonders are going on within. And little caring either...

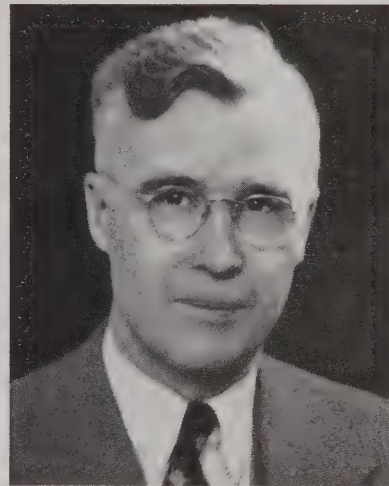




E. Snyder, Jr.  
R. Harris



H. Koopman, Jr.  
F. Stone

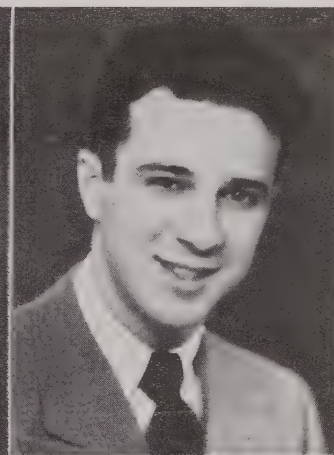


Dr. R. F. Makens

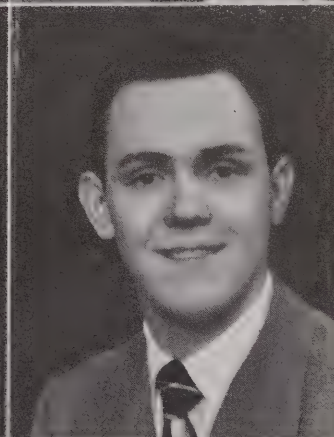


Bartholow Park

D. Saxon  
A. Paradiso



A. Olsen  
W. Ward





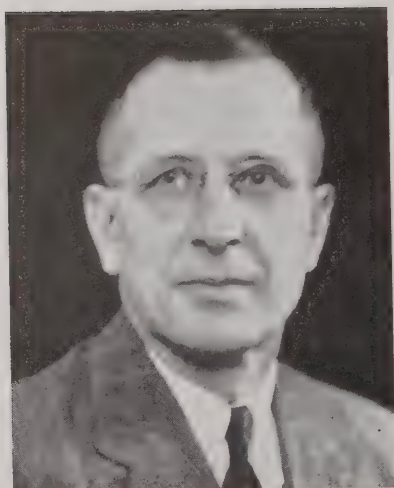


Y. Lantto  
H. Reichardt

A. LeCompte  
H. Vaughan



Dr. G. M. Machwart



Dr. R. E. Menzel

B. Horton  
A. Horstman

T. Vukovich  
E. Carlson



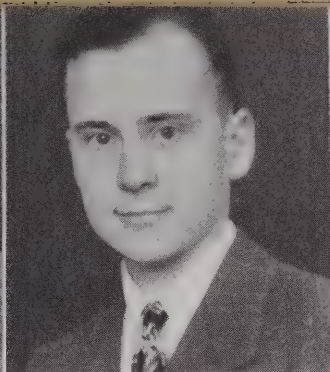




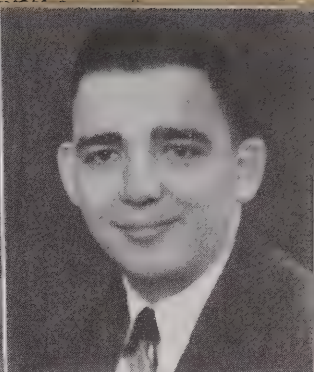
J. Garrett



J. Utken



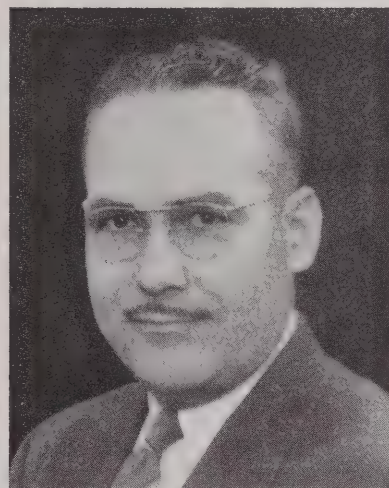
R. Phillips



A. Larsen



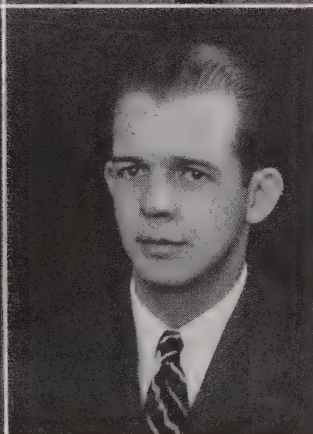
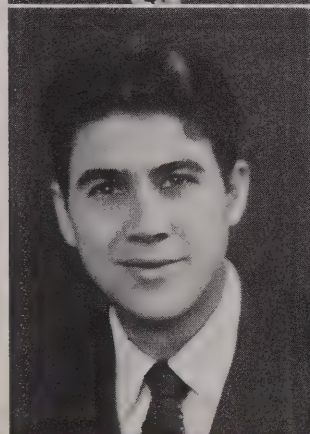
Dr. M. W. Bredekamp



E. R. Epperson

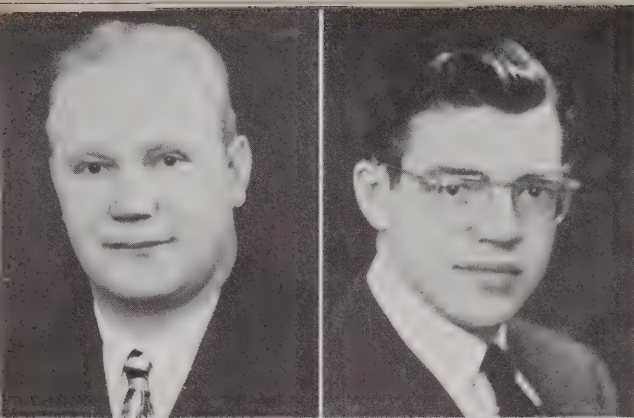


R. Barber  
R. Darling  
R. Mendelin



D. Leonard  
R. Jones  
F. Bergstrom

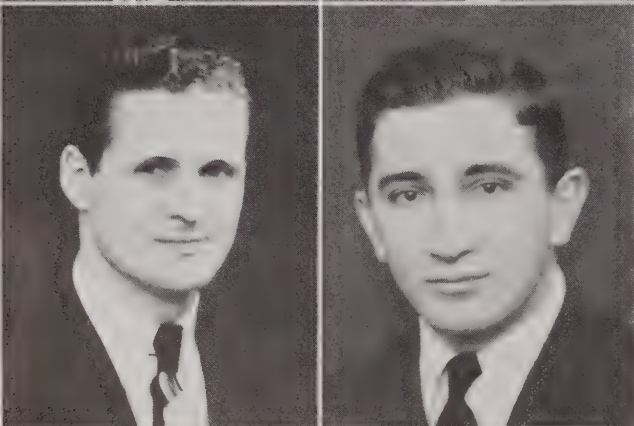




E. Pajunen  
E. Dickinson



N. Pogacich



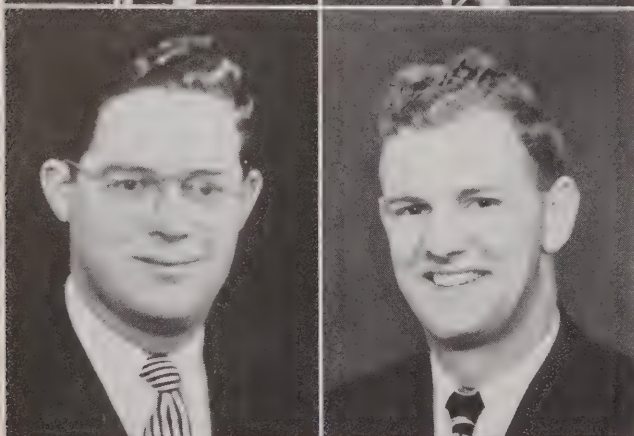
H. Bond  
A. Coste



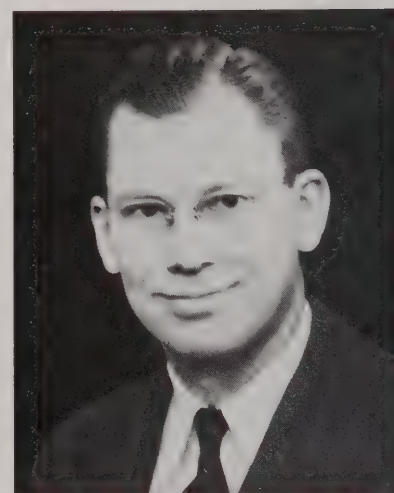
D. Dibble  
P. Fowle



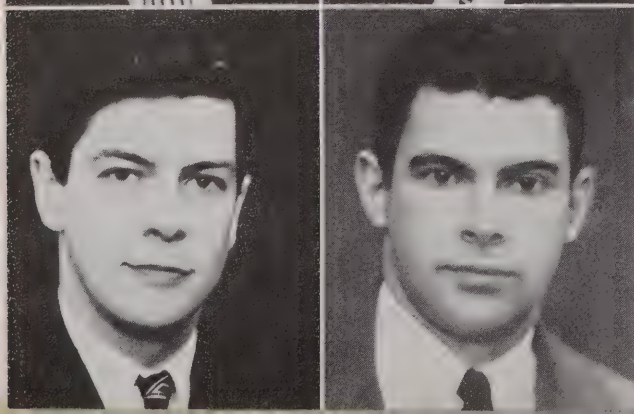
M. Bunting  
J. Davis



H. Skeels  
W. Nekervis



Dr. R. A. Donia



L. LaForais III  
R. Rice





C. M. Aikele



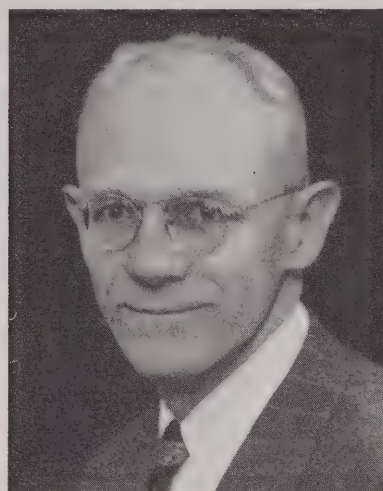
Iris Cargo



F. T. Doane



W. S. Cook



J. W. Cowin

## JUNIOR CHEMICAL ENGINEERS

FIRST ROW: D. Kangas, R. Youngblood, J. Nevitt, C. Houle, J. Baudhuin. SECOND ROW: J. Trousdale, P. Schubart, C. Taylor, D. Kluck.





## SOPHOMORE CHEMICAL ENGINEERS



FIRST ROW: R. Heynen, G. Petrich, W. Trendle. SECOND ROW: H. Yabrove, D. Vaughn, E. Volker, C. Davidson

## FRESHMAN CHEMICAL ENGINEERS



FIRST ROW: B. Stasuk, L. Tormen, D. Tobin, C. Hawn. SECOND ROW: C. Anderson, R. Villeneuve, J. Hane, D. Sprigings.





Dr. C. L. San Clemente

I. Coon  
J. Maki



## MEDICAL CLUB



FIRST ROW: P. Towey, M. Aasve, G. Peterson, J. Weideman. SECOND ROW: V. Kump, A. Rice, G. Johnson, J. Stone. THIRD ROW: H. Harootlian, J. Massie, F. Feneley, G. Schewe.





FIRST ROW: Fred W. Stone, Harry H. Vaughan, Floyd A. Bergstrom, Nick C. Pogacich, Herbert M. Bond. SECOND ROW: E. Gale Dickinson, William J. Runge, Eugene P. Brady, David B. Mowatt.

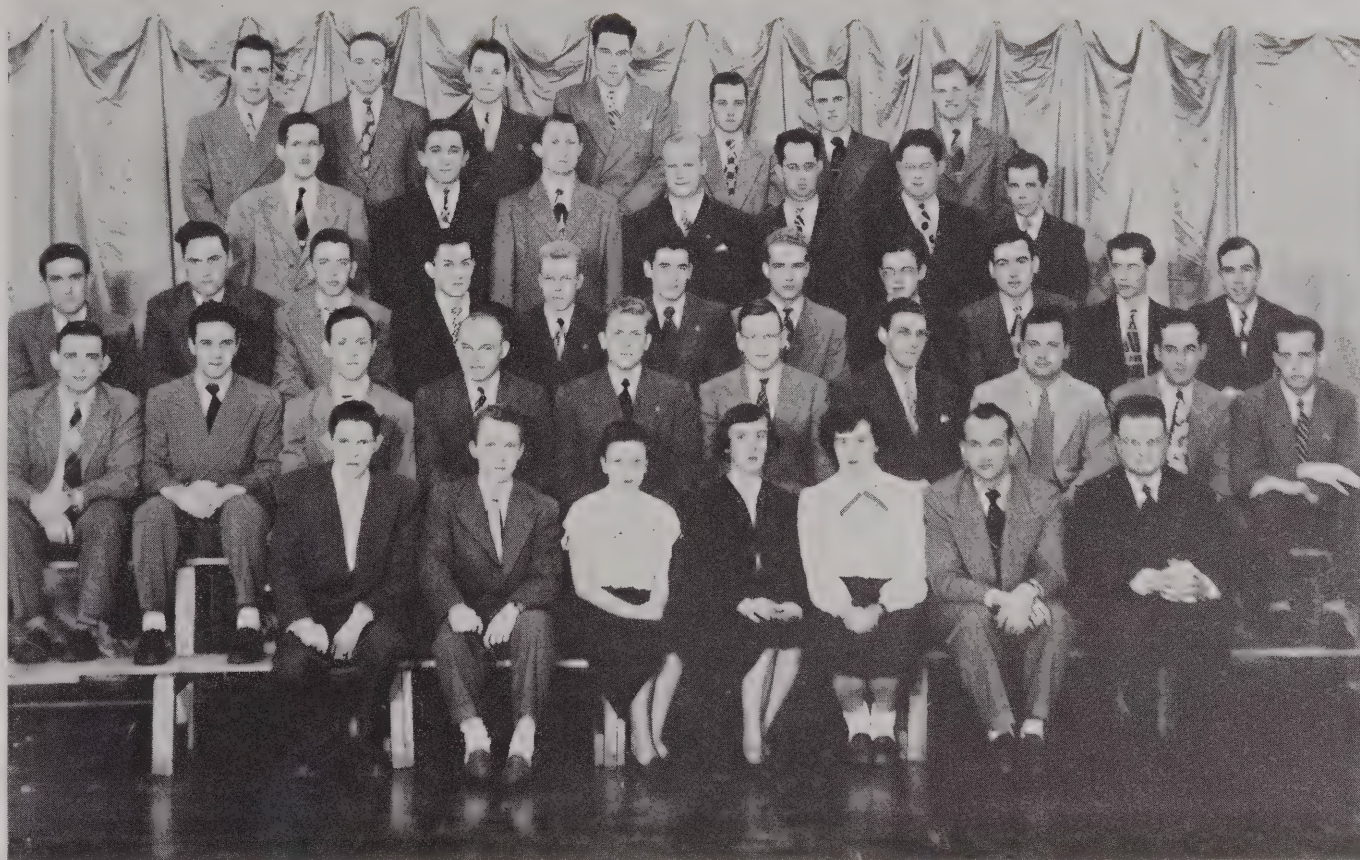
## PHI LAMBDA UPSILON

Phi Lambda Upsilon, an honorary chemical and chemical engineering society, was founded at the University of Illinois in March, 1899. The objectives of the society are "the promotion of high scholarship and original investigation in all branches of pure and applied chemistry." The Michigan Tech Chapter, Alpha Omicron, is the newest addition to the society. It was formed in 1943 by the affiliation

of the former Chi Epsilon Chi, a local chemical honorary group, with the national fraternity.

The requirements for membership are mainly scholarship and general excellence in chemistry and chemical engineering. The members well represent Koenig Hall and their field of work. They are well known for their ability.





FIRST ROW: W. Trendie, K. P. Schubart, L. Tormen, P. Fowle, D. Tobin, F. Stone, R. E. Jones. SECOND ROW: A. D. Larsen, A. M. Paradiso, W. E. Ward, E. S. Carlson, R. W. Youngblood, C. L. Davidson, J. E. Tancig, A. R. LeCompte, H. Yabrove, F. A. Bergstrom. THIRD ROW: R. Villeneuve, W. Sullivan, C. Taylor, D. Smalter, D. Kangas, C. Houle, J. Trousdale, E. G. Dickinson, T. Vukovic, D. Mowatt, J. Holland. FOURTH ROW: T. Cahoon, A. Coste, R. Barber, E. Pajunen, R. Nickolson, H. Skeels, A. Olsen. FIFTH ROW: J. S. Nevitt, W. J. Runge, J. D. Spain, E. P. Brady, E. F. Volker, D. G. Springis, W. F. Nekervis.

## AMERICAN INSTITUTE OF CHEMICAL ENGINEERS

The history of the Michigan Tech Chapter of the American Institute of Chemical Engineers dates back to the spring term of 1939 when the student chapter was organized. Acceptance by the AIChE came in the following school year with a gradual expansion in membership and activities until interruption by the war. Following the war, the constitution was amended to allow the formation of an affiliate for the chemical engineering and chemical majors at the Sault Branch.

The student chapter establishes contact with the new developments in industry by means of movies, speakers, and an informal student-faculty, bi-weekly get-togethers, known as the "coffee hour." The chapter also participates in extra-curricular activities

such as the Winter Carnival, Home-Coming Parade, and other campus activities. To foster interest in the annual Beard-Growing Contest, the AIChE conducts its own contest. The winner's name is engraved on a plaque which is hung in the chemical engineering library along with the trophy, a highly decorated mustache cup.

In addition to its many other activities, the chapter puts out its own publication, **The Catalyzer**. This is sent to chemical engineering and chemistry graduates to keep them informed about department news and the addresses of former students. The staff of **The Catalyzer** is to be complimented on the excellent work they have done.



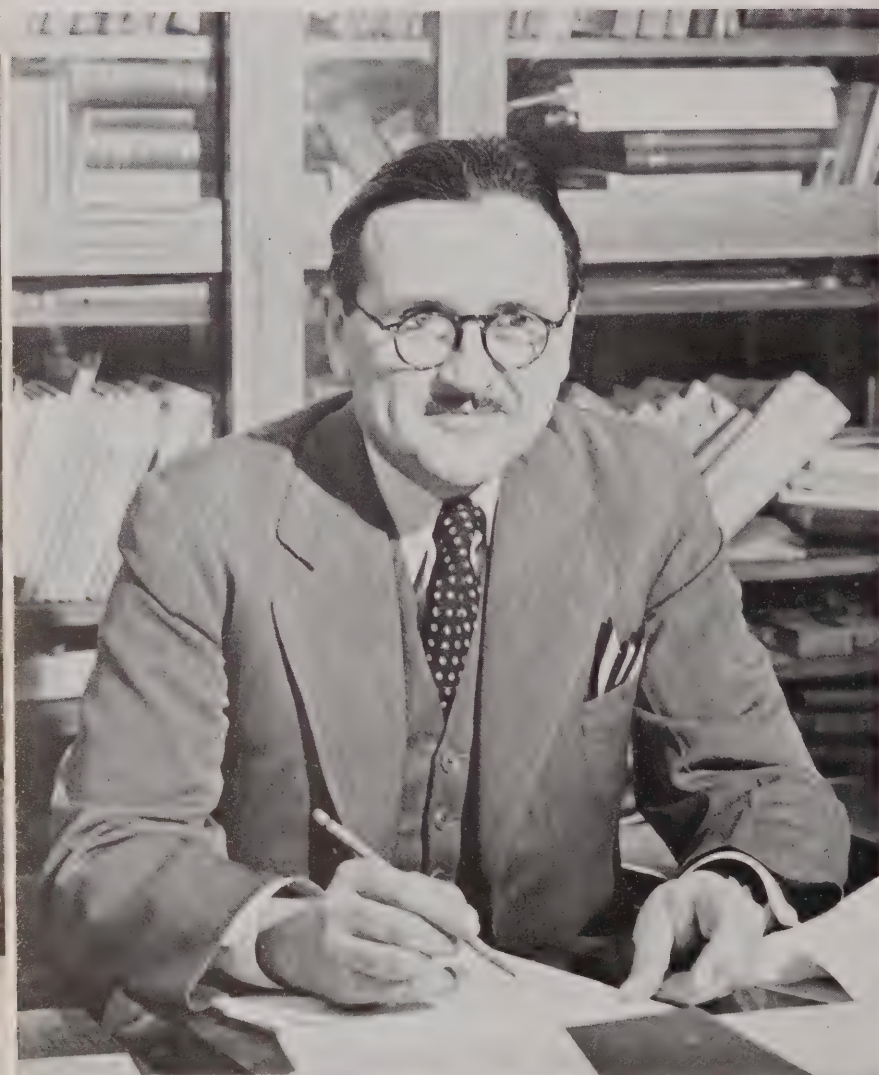




The  
Department of  
**GEOLOGICAL  
ENGINEERING**







DR. A. K. SNELGROVE

Professor and Head of the Department of Geology, Dr. A. K. Snelgrove resigned from the Princeton University faculty staff in 1940 to accept the position at Michigan College of Mining and Technology.

Dr. Snelgrove is a graduate of McGill University, receiving his B.S. and M.S. degrees from that institution, and obtaining his Ph.D. from Princeton University.

Dr. Snelgrove was employed as a geologist by several organizations; for the Pure Oil Company in Wyoming; made a geological survey on Canada; led the Princeton Geological Expedition to Newfoundland; and was official geologist to the government, in charge of a group of Tech students working on a geological survey in Newfoundland.

Among the numerous professional organizations in which Dr. Snelgrove holds membership is the Canadian Institute of Mining and Metallurgy. He is also a member of Theta Tau and Psi Upsilon fraternities. Dr. Snelgrove is listed in "American Men of Science"; "Who's Who in Engineering"; "Who's Who in Canada"; "Who's Who in Newfoundland"; and "Who's Who in American Education."

## GEOLOGICAL ENGINEERING

Picture the world a thousand years from now when the earth has been reduced to a heap of pulverized pebbles by the hammers of countless ages of geologists. By then, all the strata will have been ripped up from Mount Everest to the bottom of the ocean, and classified and examined and scrutinized. Nothing around but row on row of glass cases filled with the remains of fields and hills, all neatly labeled according to the system. Preferably with long names.

But the picture isn't really that bad. The student geologist around Tech needn't be condemned for what shall be. He concerns himself mainly with his mineral lens and his rock collection, just learning what is the real story about what goes on underneath the surface of it all. Here is the beginning of the men who, divining rod in hand, will find the Mesabi Range of tomorrow or start the next stampede to the Yukon.

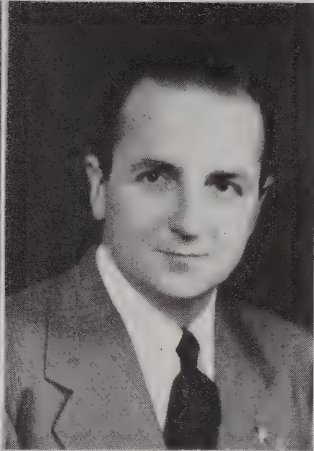
Some of the geologists end up with large mining companies, figuring out where the next ore is com-

ing from. Others hit the prospecting trail with the mule and pick, waiting to make the big strike. Some find themselves floating in oil in the southwest or camped out in the middle east with nothing but Arabs and camels for company. Wherever rocks are found, there geologists are found, too.

The course of study is pretty rough. Only the best can survive the rigors of four years of it. Remember that poor fellow who was found sitting in the mineralogy lab after a quiz, methodically hitting himself on the head with his pick? "I'm an andesite porphyry!" he cried. "See my feldspars" Sure enough, his eyes were flashing at ninety degrees. But this was an extreme case.

This select band of geologists and geological engineers is a great credit to their school. They form a valuable part of the student body. With a song in their hearts and their pockets full of pebbles, (some say rocks in their heads,) they made the campus much more interesting.





R. Chapman  
E. Oliveira

P. Riddell  
A. Myers



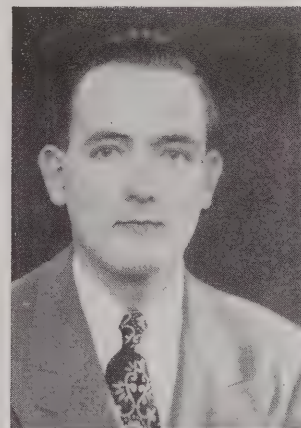
Kiril Spiroff



R. M. Denning

J. Abbott  
G. Young

M. Stuk  
R. Campbell









The  
Department of  
**MINING  
ENGINEERING**







J. MURRAY RIDDELL

Professor Riddell is Head of the Department of Mining Engineering.

He attended the Illinois Institute of Technology for six years; the degrees of B.S. and E.M. were procured at the Michigan College of Mining and Technology.

While most of Professor Riddell's industrial experience has been confined to the iron ore regions of Lake Superior, he has done work in sixteen states and in Canada and Russia, the latter for two years.

He is included in a number of professional organizations; the outstanding membership is in the Saunders Gold Medal Award Committee, as the result of an exceptional accomplishment in mining work.

Professor Riddell has made a substantial contribution to the art of shaft sinking by devising a mechanism which mechanically mucks vertical shafts, commonly known as the Riddell Shaft Mucker.

## MINING ENGINEERING

"I must go down to the mines again," or some similar sentiment beats in the heart of the student who elects to come to Houghton to take the course that made Tech famous. Behind him is the long line of men who have made the "Michigan College of Mines" famous all over the world. In front of him stretches four years of learning the ins and outs of block caving, open stoping, evaluation, all the myriad subjects that the miner must study to receive his degree.

Some of the students around the campus take a dim view of anyone who elects to spend the greater part of his time in a hole in the ground. Bar room pallor is bad enough around Tech without missing the sun light, too. But they don't understand the conditions underground. Picture cool surroundings on the hottest summer day. Imagine working under constant temperature and pressure. What more can anyone ask?

Mining goes back to the day the first caveman discovered placer gold in a stream. Unhampered

by any stockholders or board of directors, he felt free to pick it up whenever he felt like it. Later he began to trade it for other goods, and the same story might be written for all the useful metals. Man found out early that along with agriculture, mining was basic.

One hundred years ago this year, the miners—forty-niners were taking time enough off from courting Clemantine to do some prospecting. All over the world the frontiers were being pushed back in the search for mineral wealth. It got so that from the top of the Andes to the jungles of Burma it wasn't surprising to hear "Hy there, waiters," being yelled back and forth.

And so down to the present day. Still the eager students come and go to learn the secrets of the mining profession. After four short years, they go out armed only with pick and shovel to inflict themselves on the world. As they march away, the sound of their singing comes back. "Heigh-ho, heigh-ho, it's off to work we go..."





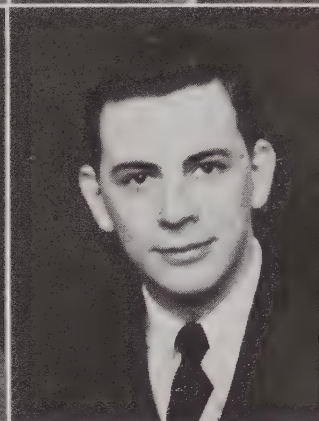
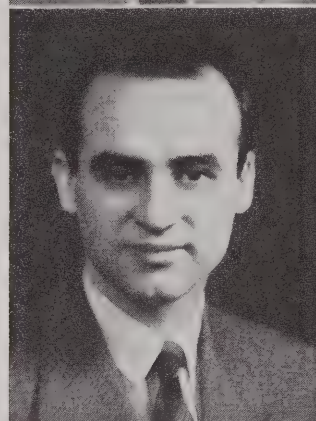
R. C. Matson



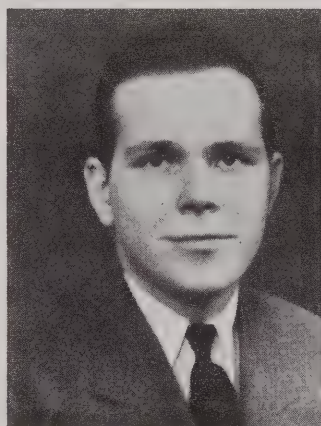
R. Smtih  
J. Phillips



J. Walker  
A. Christenson



M. Marin  
G. Haataja  
J. Matson

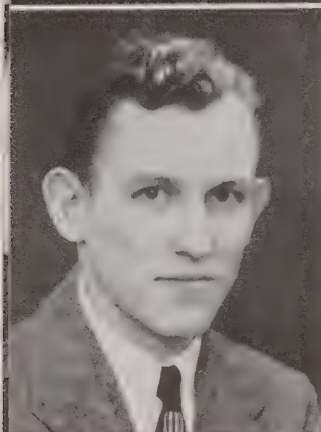


H. Toelle, Jr.  
O. Axelson

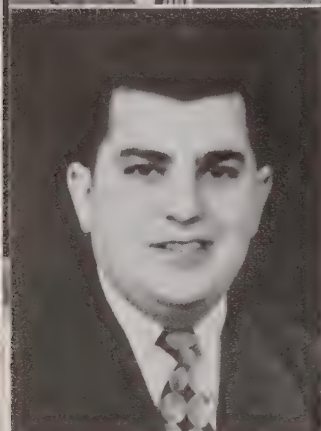




R. Wallace



T. Johnson

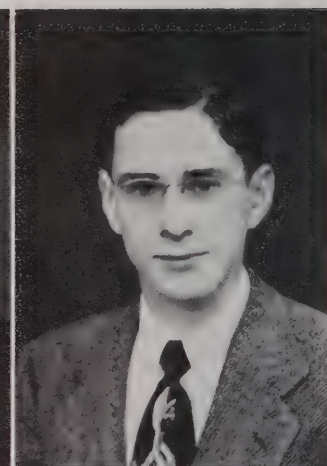
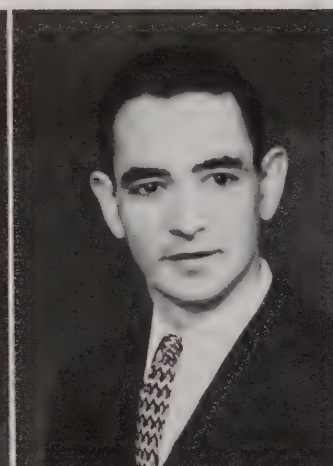


J. Frendewey

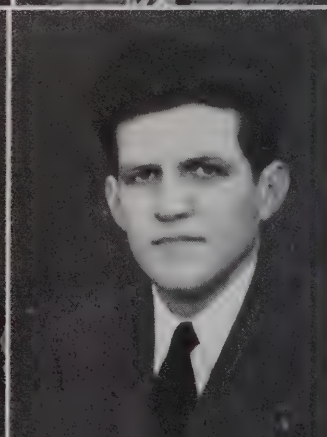
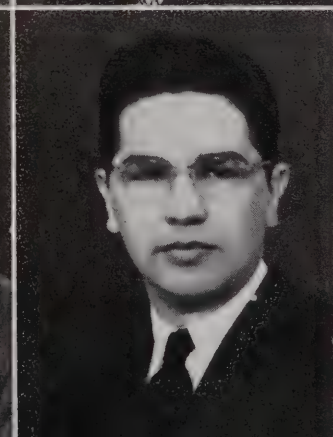
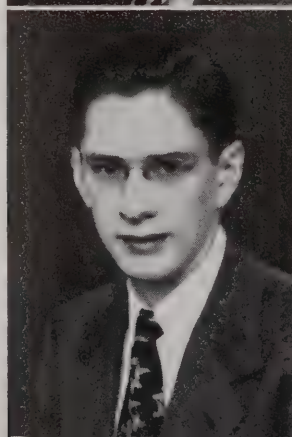


C. M. Harry

O. Borgeson  
T. Becker  
C. Matson



R. Matson  
O. Hakala  
C. Robinson

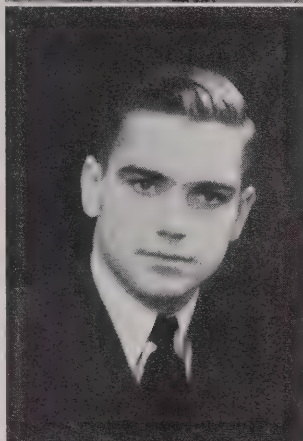
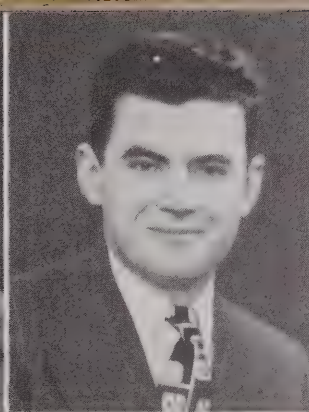






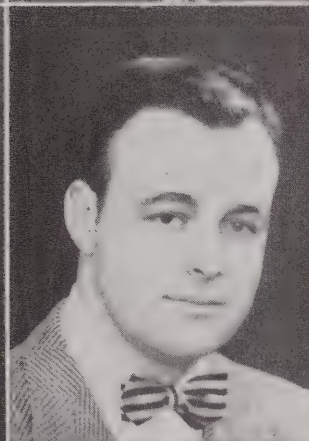
M. Reid

M. Voelker  
R. Bertie



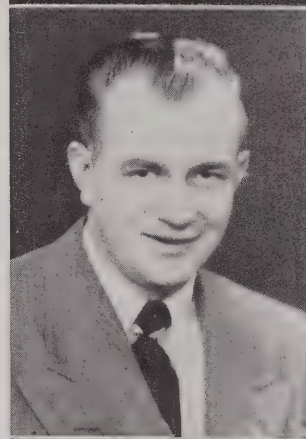
L. Gray, Jr.

J. Hager  
R. Botsford



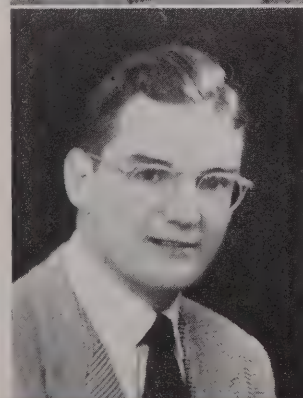
P. Kyhkynen

B. Petersen  
W. Brown



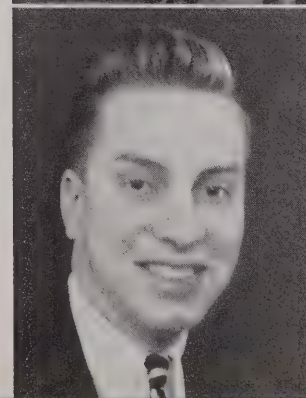
R. Peckham

J. Magnuson  
R. Clevestine



T. Hruby

T. Laurila  
A. Bernholdt, Jr.





## FRESHMAN AND SOPHOMORE MINING ENGINEERS



FIRST ROW: G. Lentz, W. C. Sheldon, T. E. DeWan, D. T. O'Brian, G. A. Cleary. SECOND ROW: R. D. Knox, A. L. Richard, J. A. Saplis, C. D. Bailey, J. O. Greenslade. THIRD ROW: J. L. Kirkwood, G. L. Bettens

## A. I. M. E.



FIRST ROW: J. D. Abbott, Wm. L. Barke, O. Axelson, W. E. Brown, K. Anderson, C. Bjorne, R. Berkhahn, A. Myers, W. Matthews, R. Lindlof, A. J. Christenson, R. H. Chapman. SECOND ROW: R. A. Mann, J. Haien, J. Frendewey, L. B. Gray, Jr., O. W. Hakala, M. J. Marin, C. L. Matson, P. A. Riddell, E. R. Ruhlman, S. Ruhlman, R. D. Knox, F. W. Kuehnel, D. Avery. THIRD ROW: C. M. Harry, H. C. Boback, P. C. Ellsworth, P. H. Kyhkynen, G. R. Haataja, R. P. Matson, W. M. Smith, C. J. Robinson, E. H. Oliveira, P. M. Carvalho, D. R. Smith, T. W. Becker.





FIRST ROW: J. R. Young, A. G. Bernholdt, C. E. Fritts, M. C. Van Lewen, R. E. Campbell, S. B. Treves, E. M. Laczynski, A. K. Foulds, R. E. Margenau, J. O. Greenslade, R. A. Alexander, L. M. Larson. SECOND ROW: R. P. Geyer, R. F. Perrett, R. McArdle, R. A. Peckham, A. L. Richard, J. L. Kirkwood, W. H. Sermon, G. A. Cleary, D. T. O'Brian, W. C. Sheldon. THIRD ROW: G. D. Young, M. E. Stuk, R. W. Riedel, R. R. Wallace, H. A. Toelle, J. A. Mandarino, L. E. Price, C. A. Neubauer, E. C. Helge, H. J. Braun, L. A. Villarreal, T. E. DeWan.

## AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS

The Michigan Tech Chapter of the American Institute of Mining and Metallurgical Engineers forms a nucleus of the mining tradition of the college. Early in the history of MCM & T the Mining Club was formed. In 1935, this was replaced by the student chapter of the AIME.

Well organized bi-monthly meetings attracted a record number of members this year. Colorful movies and interesting talks presented by professional men kept the members informed about the latest developments in the field of mining, mineral dressing, and geology. Of especial interest were the movies on the Newfoundland Geological Survey presented by Dr. A. K. Snelgrove, head of the geology department at Tech.

The traditional Isle Royale trip over Decoration Day Weekend was a success both in attendance and results. Some of the diligent explorers found many interesting mineral specimens, and, as usual, their

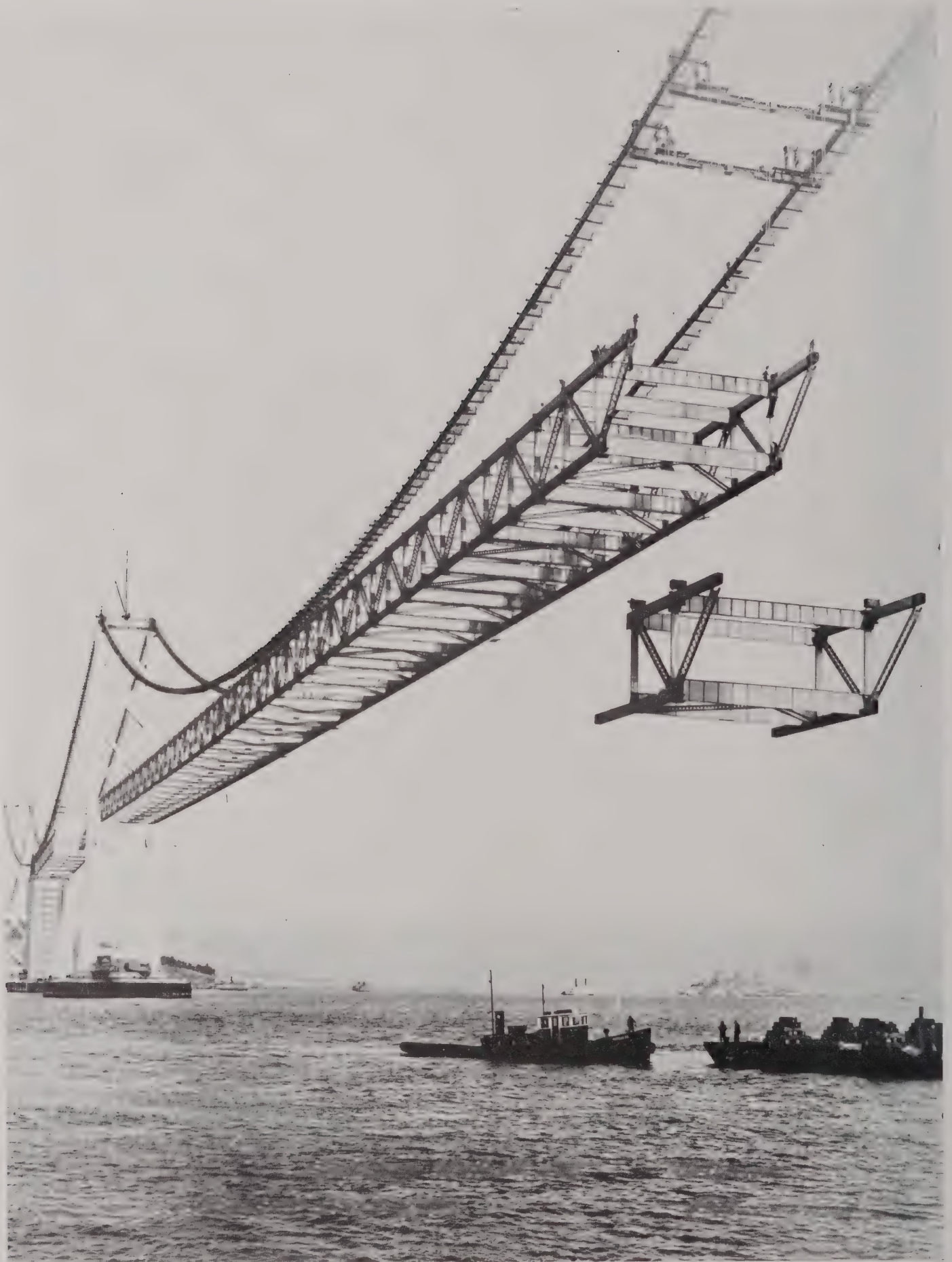
packsacks were heavier coming back than going over. The less energetic of the men remained in camp indulging in indoor sports. There were a few fishermen in the group, and fish were provided for almost every meal.

The AIME was active in both the Winter Carnival and Homecoming. Their float in the parade was especially good, as was their snow statue in front of Sperr Hall.

The AIME held its banquet in January at the Scott Hotel in Hancock. Among the guest speakers was C. H. Benedict, former Chief Metallurgist for the Calumet and Hecla Co. He, and members of the faculty, enliven the meeting by relation of some of their personal experiences in their respective fields.

In this year, as in the past, the AIME has kept alive the traditions of the mining department of Michigan Tech.







The  
Department of  
**CIVIL  
ENGINEERING**







WILFRID C. POLKINGHORNE

Professor Wilfrid C. Polkinghorne was appointed Head of the Department of Civil Engineering in the fall of 1945. He holds the degrees of B.S. and E.M. from the Michigan College of Mining and Technology and a M.S. degree from Yale University.

A member of the American Society of Civil Engineers, Professor Polkinghorne served as chairman of the A.S.C.E. Seventh Registration for Engineers, Architects and Mine Surveyors in 1939, and has served as chairman of that board. He holds membership in structural and engineering organizations and also in the Theta Tau Fraternity, the Yale Club of Michigan and the Masonic Order. Professor Polkinghorne's biography appears in "Who's Who in America" and "Who's Who in Engineering."

## CIVIL ENGINEERING

There always seemed to be someone in the army who could dig ditches better than everybody else. Foxholes, slit trenches, anything they wanted, he was in there. Then there was the man who could throw up Bailey bridges all by himself. Not everyone, however, has been exposed to this valuable training. Some people have to pick up what they can from erector sets. Sooner or later, all of them find themselves enroiled in Civil Engineering far above the stagnant waters.

Man has found out the hard way that to get across a body of water he had to have a boat, a bridge, or pre-shrunk suit. Carrying a canoe around or looking for the sanforized label was too much trouble for the average individual, so he put up bridges. Usually, most of the structures fell down, but gradually some of the smarter people began to put together ones that stood up. Not artistic at first, but good dependable constructions.

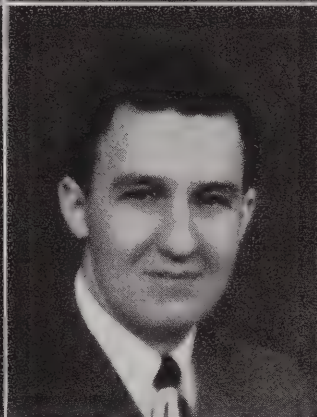
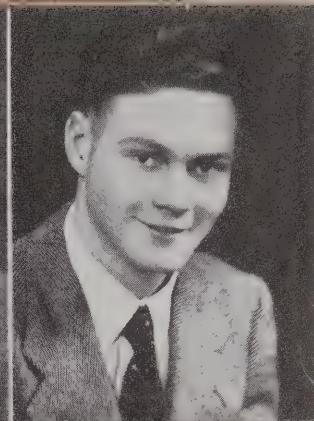
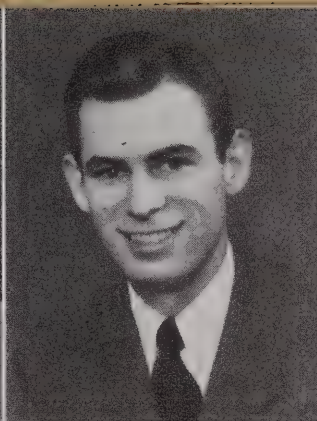
The trial and error system was too good to last. Someone discovered stresses. Compression and ten-

sion, up and down, moving and standing still; stresses were all over everything. And the civil was forced to start using the drawing board. Everything was down on paper.

Some of the men didn't go for these innovations. They decided to get into something different. They reasoned that everybody . . . well, every town has sewage, so why not lay pipe in ditches and get rid of the stuff? This was quite an improvement over the old system of heaving the excess refuse out of the nearest window. Sanitation became a byword all over the world and the civils were in like flynn. (Not Errol.)

All of which brings us back to 1949. Whether he be ditchdigger or bridge raiser, the student is welcomed to Michigan Tech with open arms. Here he will learn to build suspension bridges like they put up over Puget Sound, dispose of sewage in the modern way like they do in Houghton, and build highways as good as the ones they have in the Copper Country. What more could anyone ask?





H. Zanoni  
G. Hallada

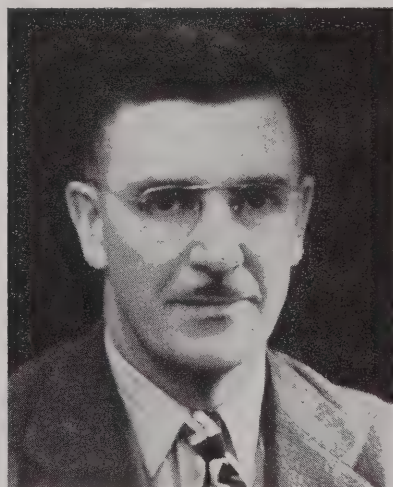
T. Wiseman  
F. Dewar, Jr.

J. Lenz  
W. Bullen

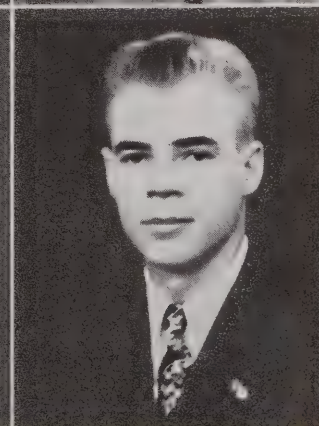
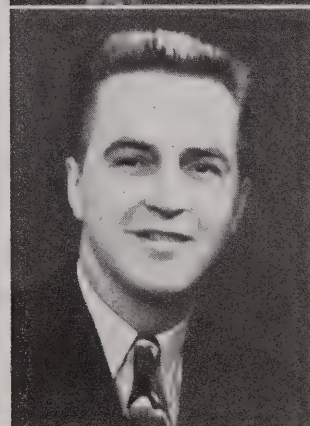
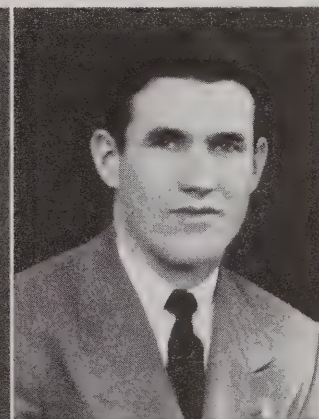
R. Sipinen  
W. Benzie

R. Berg  
K. Bucklund

W. Barton  
J. Muschell



E. P. Wiedenhoefer







C. Peterson  
R. McQuade

F. Kellow  
C. Johnson

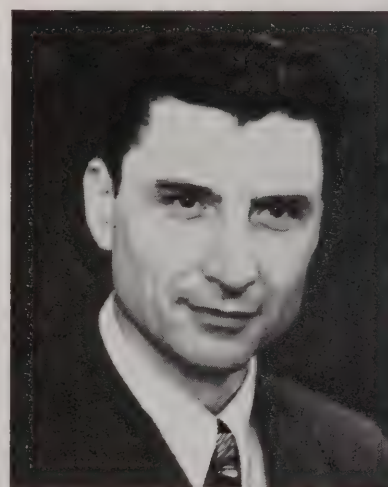
R. Kaufman  
L. Hanson

P. Pearson  
R. Flynn

J. Price  
R. Hollister

R. Whitney  
A. Brown, Jr.

W. Raketich, Jr.  
J. Winkel



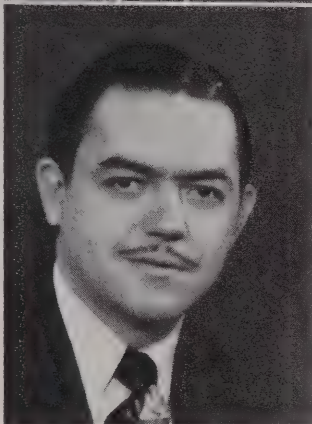
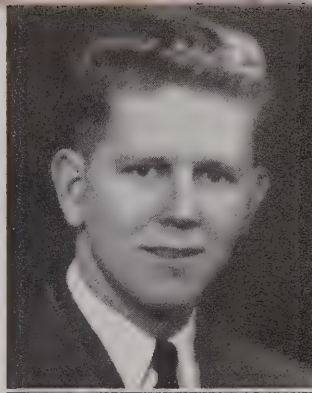
G. Roberts





R. Koivuniemi

W. Flaa  
W. Grimsby

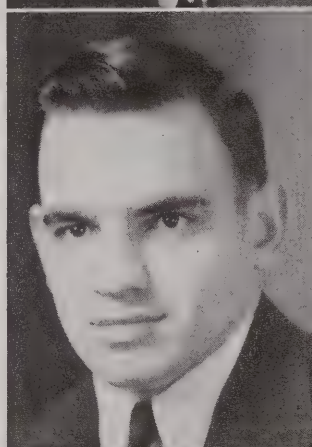


T. Chronowski

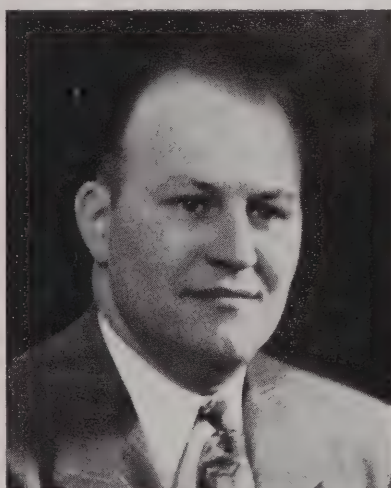
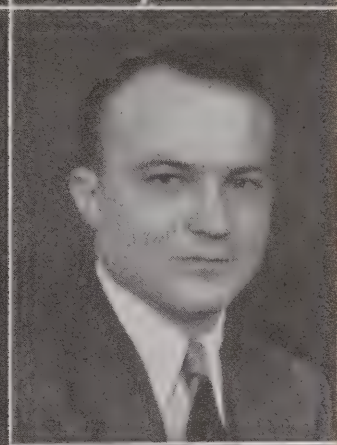
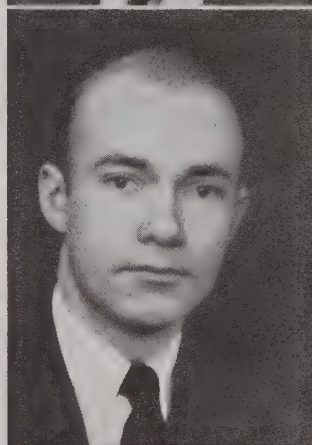
L. Marttila  
R. Hull



T. Harris  
D. Ringler

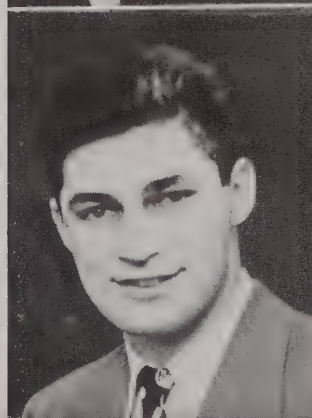


C. Albertson  
T. Hecker

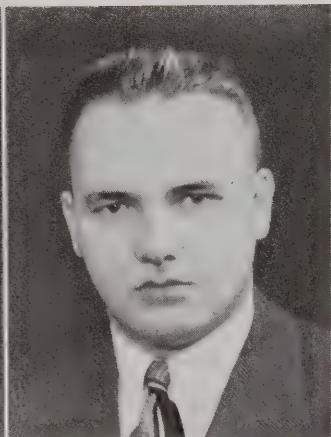


T. R. Coon

R. Woods  
J. Cortopassi







J. Erickson  
D. Shipman



R. Watkins



G. J. Caspary

J. Patek  
W. Potter

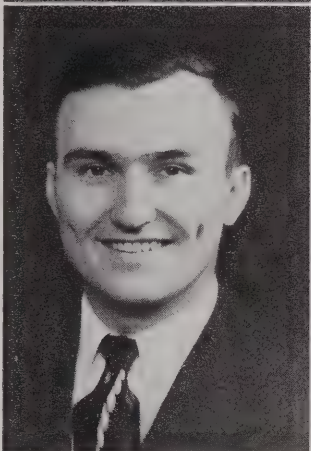
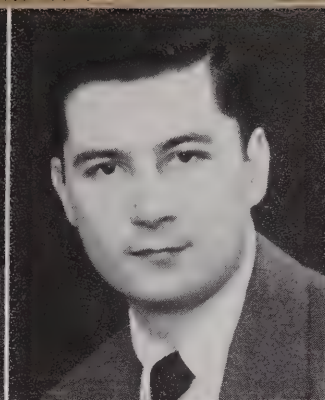
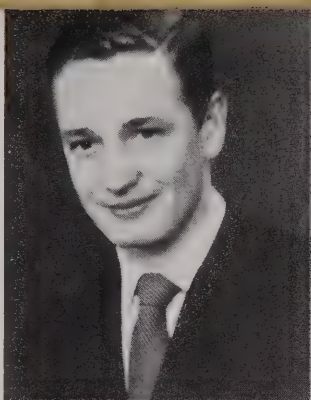
B. Tretheway  
D. Chase

C. Staskiewicz  
W. Besaw

N. Mascioli  
G. Coon







R. Johnson  
R. Peterson

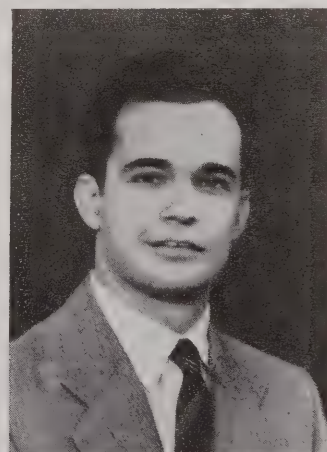
W. Foth  
G. Watz

B. Hikes  
E. Johnson

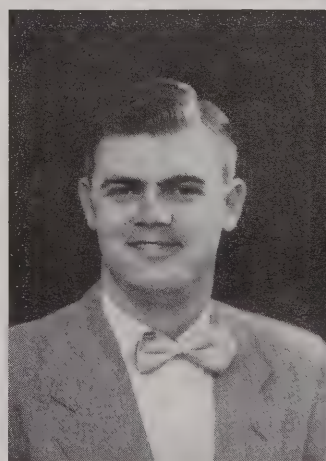
H. Day  
L. Rahoi



J. P. Smallwood



O. Lacombe



L. Rhoads  
A. Morse, Jr.





FIRST ROW: T. Wiseman, J. Caspary, T. J. Harris, J. E. Erickson, L. E. Hanson, W. D. Bullen, P. A. Lundborg. SECOND ROW: R. J. Peterson, R. J. Holiister, C. Anderson, P. B. Frair, W. J. Benzie, C. M. Ellis. THIRD ROW: J. J. Monkoski, L. A. Rhoads, G. R. Watz, C. H. Englund, W. L. Barke, W. R. Barton, L. R. Marttila. FOURTH ROW: F. C. DeWar, C. P. Ulstad, H. L. Day, E. R. Gaer, V. C. Price, B. Tretheway, R. D. Watkins, T. C. Hecker.

## CHI EPSILON

The Michigan Tech Chapter of the Chi Epsilon Fraternity was installed at Michigan Tech during the spring of 1948. Enterprising members of the rapidly expanding group of civil engineering students realized that there was a strong need for an honorary association to recognize their outstanding men. Chi Epsilon, in spite of its recent inauguration, has taken its place as one of the most active groups on the campus. Provided with excellent leadership, Chi Epsilon has even bigger plans in the future, including its own personnel index of graduated civil engineering students. The Michigan Tech Chapter

also has as one of its main themes the complete cooperation with the American Society of Civil Engineers.

Chi Epsilon was formed at the University of Illinois in 1922. Before the war it had twenty chapters. The Michigan Tech Chapter was the first formed after the war, and was the first formed in the state.

During this year Lavern "Sliver" Hanson served as president, Joseph Erickson as vice-president, Paul Lundborg as secretary-treasurer, Dean Bullen as associate editor of "The Transit," and Gerald Caspary as faculty advisor.



## JUNIOR CIVIL ENGINEERS



FIRST ROW: D. Ritsema, E. Gaber, R. Beula, R. C. Sernka, J. R. Siewert, J. L. Krause. SECOND ROW: A. R. Muzzin, L. A. Stener, D. K. Holland, J. C. Christensen, J. M. Jabara, E. F. Platske. THIRD ROW: Wm. J. Conlogue, W. F. Cox, J. Messink, B. K. Larm, J. A. Simi.

## SOPHOMORE CIVIL ENGINEERS



FIRST ROW: H. Burton, D. Rowe, W. Cox. SECOND ROW: E. T. Samson, R. G. Vernon, J. Messink, G. Pelishek.



## FRESHMAN CIVIL ENGINEERS



FIRST ROW: L. P. Kiernan, R. J. Neeland, C. F. Roser. SECOND ROW: R. White, R. Carey, J. Lahr, J. Nash.

## A. S. C. E.



FIRST ROW: W. Raketich, J. Smallwood, G. J. Caspary, T. R. Coon, W. C. Polkinghorne, E. P. Wiedenhofer, F. P. Sundquist, C. J. Staskiewicz, J. C. Price, W. D. Bullen, R. L. Hull, L. E. Hanson. SECOND ROW: R. White, J. E. Erickson, G. R. Watz, A. F. Walter, D. R. Abel, J. J. Yared, P. A. Pearson, D. Rowe, G. N. Coon, R. S. Tretheway, J. R. Siewert. THIRD ROW: H. Day, S. Maleska, Wm. Glazier, J. Messink, T. Harris, T. C. Hecker, R. J. McQuade, F. B. Kellow, L. Larsen, D. G. Chase, G. Johnson, T. Wiseman, F. Dewar.





FIRST ROW: W. J. Benzie, J. E. Muschell, R. W. Kaufman, T. V. Chronowski, W. J. Bier, J. H. Lenz, A. H. Brown, R. E. Johnson, R. J. Neelands, C. F. Roser, R. D. Fitzgerald, J. R. Duncan. SECOND ROW: B. K. Larm, R. Koivuniemi, Wm. Flaa, E. J. Langsford, G. J. Hollada, J. L. Krause, G. W. Pelishek, R. D. Watkins, Wm. J. Besow, W. R. Dowsey, J. A. Johnson, W. J. Fleck, J. Millan. THIRD ROW: R. J. Hollister, W. R. Barton, C. Albertson, R. Beula, T. Flemal, D. Ringler, R. C. Sernka, J. M. Jabara, C. P. Ulstad, E. R. Gaber, L. R. Marttila, R. L. Anderson, R. S. Williams.

## AMERICAN SOCIETY OF CIVIL ENGINEERS

The American Society of Civil Engineers was founded in New York on November 5, 1852, as an organization dedicated to the encouragement of social intercourse among men of practical science, and to the advancement and improvement of the civil engineering profession. Since the time of its inception the ASCE has grown in stature and influence until today, it stands as one of the foremost engineering societies in the country. Eligibility for membership has always been based primarily on professional experience, and personal character.

One of the important functions of the society has been the assistance of the young engineer in the earlier years of his career. Toward this end, student chapters have been established at many of the technical schools in the country.

The Tech chapter evolved in 1931 from a student group called the Civil Club. During the seventeen years of its existence, it has become an increasingly important extra-curricular activity for the under-

graduate student in civil engineering. The semi-monthly meetings feature educational movies, discussion groups, and lectures by men prominent in the field of engineering. A feature of the fall term is the annual Civil Outing. The banquet of the society is held in the spring.

ASCE has entered intramural competition with teams on basketball, bowling, hockey, and shooting. It is also the aim of the organization to take an active part in the Winter Carnival activities.

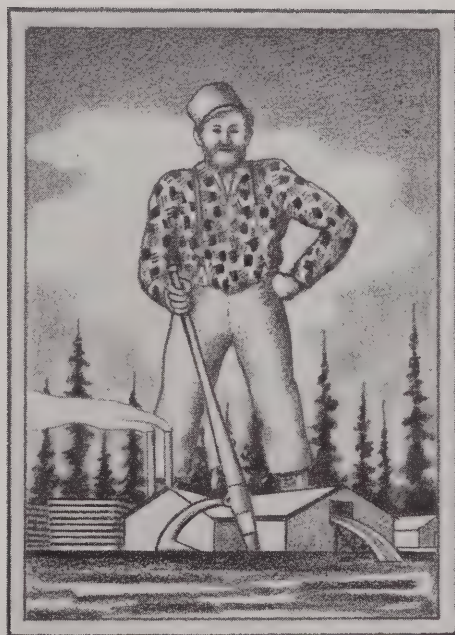
The chapter includes in its membership this year, ninety per cent of all senior civil engineering students at Tech, and several men from the Sault Branch. The officers are, at present, "Casey" Staskiewicz, president; Bill Bullen, vice-president; Jack Price, secretary; and Fred Sundquist, treasurer. The group, under the guidance of Professor E. P. Wiedenhofer, is working constantly toward its ultimate goal of 100 per cent membership from all classes.







The  
Department of  
**FORESTRY**







U. J. NOBLET

The Department of Forestry, organized and led by Associate Professor U. J. Noblet, was created in 1936. A graduate of Michigan State College, Professor Noblet completed post-graduate work at the Universities of Minnesota and Michigan.

Formerly Professor Noblet was in charge of timber mapping and cruising when assigned to the U. S. Engineers at Rock Island, Illinois. Prior to serving as Head of the Department of Athletics when he joined the Michigan Tech staff in 1929, Professor Noblet instructed mathematics and physical education at high schools in Cadillac and Grand Rapids, Michigan.

Professor Noblet is a member of the Society of American foresters and the American forestry Association. He is also a member of Kappa Delta Psi fraternity and is faculty adviser of the Forestry Club.

## FORESTRY

About a hundred years ago almost the whole country was covered with virgin forests. None of the present-day dickering with lumber companies, just walk outside, pick the type of wood, and chop it down. No fuss, no strain. But all of this has passed, now. To save our depleting forests the government or state employs groups of men to preserve and replace the trees that are left. Many of the foremost of this group take their basic training at Michigan Tech, while they're still little shavers.

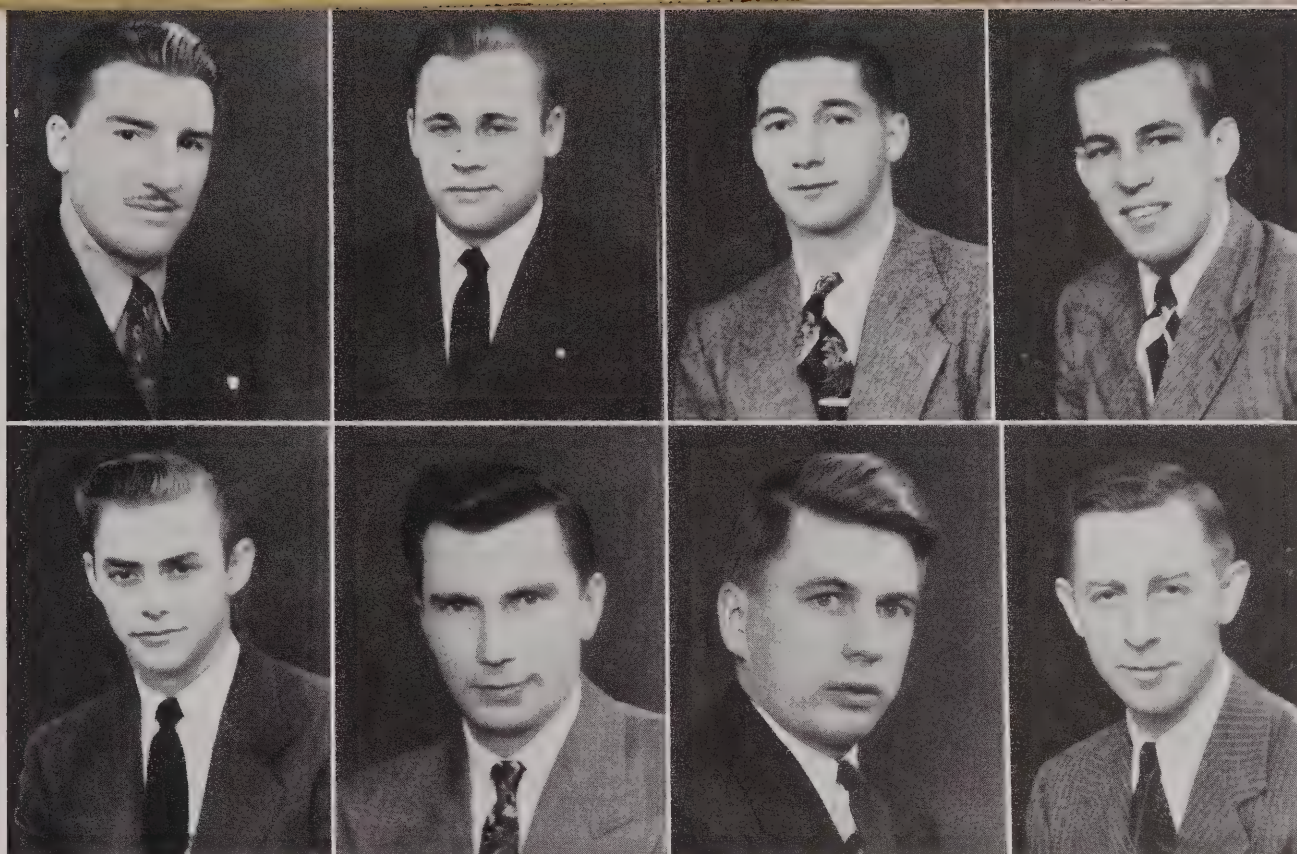
Most of the students know the forester only as "that lucky dog who doesn't have to take calculus." This alone is enough to recommend the course to the average man. But around Winter Carnival the foresters can be spotted by the luxuriant growths of beard that seems essential to being enrolled in their department. The men seem to run to lumber-jack shirts and the outdoor look, too. Then around fishing or hunting season the classrooms in Hubbell

School are stacked with rifles and poles, waiting for their owners to finish some elementary dendrology.

Some say that the school was founded by Paul Bunyan in one of his jaunts down from the North Woods. He and Babe waded across Lake Superior until they came to the Keweenaw Peninsula. It wasn't called that then. It was known to the tribes of superstitious Indians as "Techbygitcheegummie," or "Land of Copper Souvenirs." At any rate, Paul and Babe decided to spend the day by the banks of Portage Lake. They made themselves a camp site on the spot where the campus is now. Ever since then, men have been studying forestry up here.

Don't envy these student foresters. Just remember that while most of us are working in some nice comfortable, smoky factory, these unfortunates will be out-of-doors, hunting and fishing, and taking one long holiday. Poor, poor, foresters...





C. Jarvey  
R. Pierce

E. Hamalainen  
H. Holme

P. Recha  
E. Aho

W. Sandhusen  
E. Ecker



V. W. Johnson

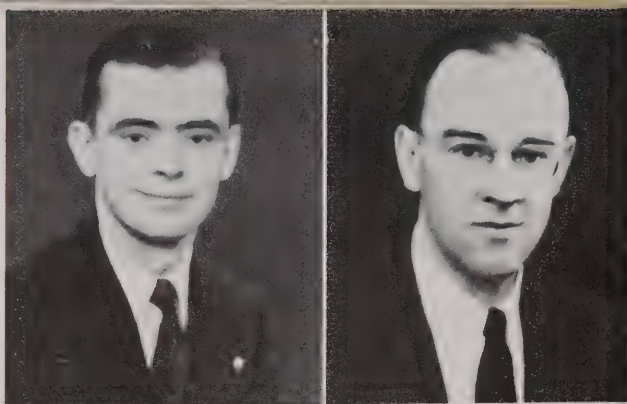
W. St. Onge



L. Drumm  
A. Zemske







M. Krieg  
W. Balmer

R. McDonald  
D. Corbin



W. H. Koepp



A. W. Toole

H. Teddy  
W. Veaser

C. Knapp  
R. Johnson







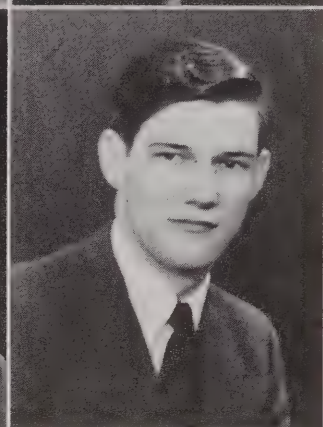
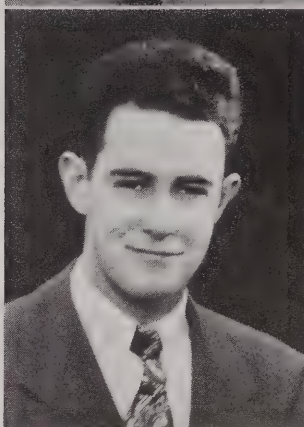
G. A. Hesterberg



A. Pepper, Jr.  
R. Hosking

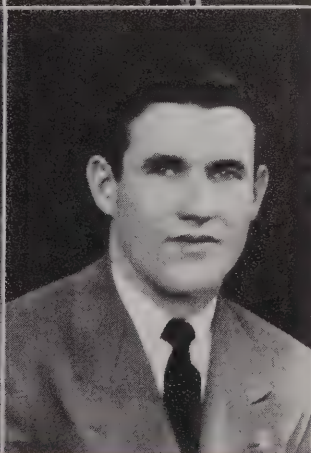
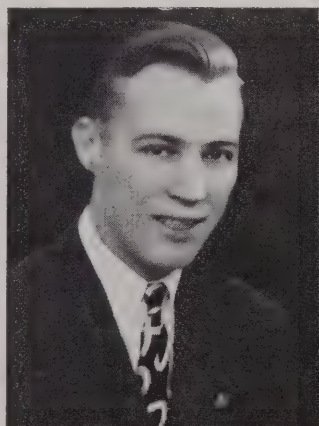


P. Collins  
L. Barden



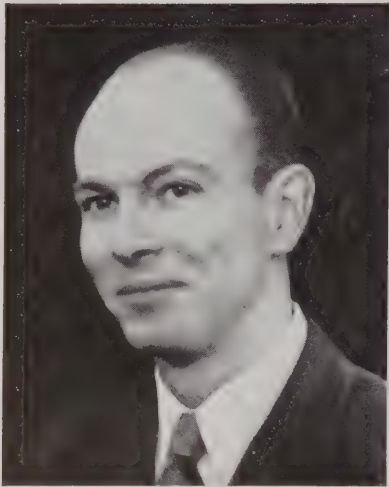
C. Aho  
M. Bourdow

R. St. Onge  
A. Bartoszek



C. D. Richards





C. W. Danielson



Dr. H. Garland



L. W. Hooker

## JUNIOR FORESTERS



FIRST ROW: J. T. Anderson, D. Makinen, J. B. Goodman. SECOND ROW: D. Stipe, P. Ellsworth, R. Peterson.



## SOPHOMORE FORESTERS



FIRST ROW: J. Loughray, D. Krautter, H. Brushe, K. Ackermann, Wm. Bertie.  
SECOND ROW: C. Neubauer, R. Todd, D. Wenzl.

## FRESHMAN FORESTERS



FIRST ROW: W. Thompson, Wm. Smith. SECOND ROW: Ed. Swensen, R. Goodrich, J. Baer.





FIRST ROW: R. L. Pierce, P. W. Ellsworth, J. T. Anderson, R. D. Hansen, T. M. Somppi, D. Makinen, J. Stipe, D. K. Wenzel, A. Zemske, W. Veaser, A. Bartosyek, E. Swensen, W. Sandhusen, D. Jones. SECOND ROW: L. F. Wood, C. P. Aho, R. R. Norkoli, W. Aho, W. E. Balmer, L. M. Reid, L. Jacobson, P. Noblet, R. Cross, G. Danko, R. Lant, J. Noblet, R. Peterson, C. Driver, R. L. Goodrich.







FIRST ROW: U. J. Noblet, R. T. Bourdow, M. W. Bourdow, D. L. Corbin, D. C. Krautter, M. J. Hutchinson, G. H. Miller, M. J. Krieg, A. A. Pepper, Jr., R. K. McDonald, H. G. Olsen, R. E. Harju, L. W. Barden. SECOND ROW: E. Bourdo, R. Hosking, L. Dewey, C. Knapp, E. H. Hamalainen, A. A. Hanninen, J. Loughray, E. G. Lambrecht, R. S. M. Bunney, Wm. J. Bertie, Wm. E. Herron, Wm. A. Freeman, O. A. Valimaki. THIRD ROW: V. W. Johnson, Wm. E. Cary, Wm. R. Smith, W. Thompson, R. T. Arlen, H. C. Brushe, K. E. Ackermann, R. Todd, H. J. Bardeleu, E. J. Ecker.

## FORESTRY CLUB

The Forestry Club was organized in 1936, and since that time has become one of the more active organizations on the campus. After the war the enrollment in the forestry department reached an all-time high. With this came an increased membership in the Club.

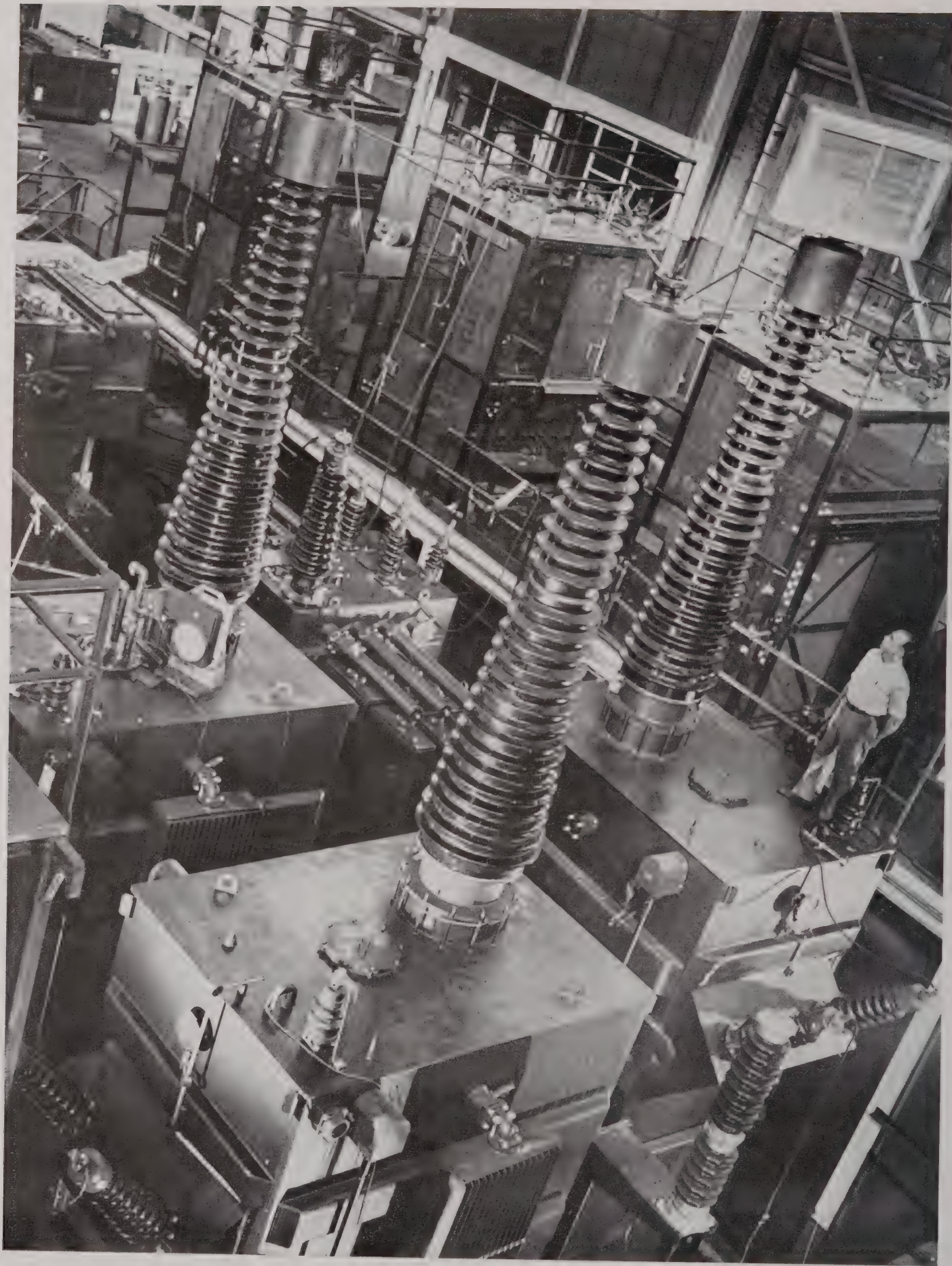
The activities of the foresters take place around the calendar. Fall term features the Buck Shoot and the well-known Lumberjack Ball. The Venison Feed highlights the winter events. The spring term sees

the annual Trout Derby, open to the staff and students of the school, and the Smelt Feed.

In addition to the events which they sponsor, the foresters take an active part in the Winter Carnival. Last year they were awarded top place in the skits and second place in the floats.

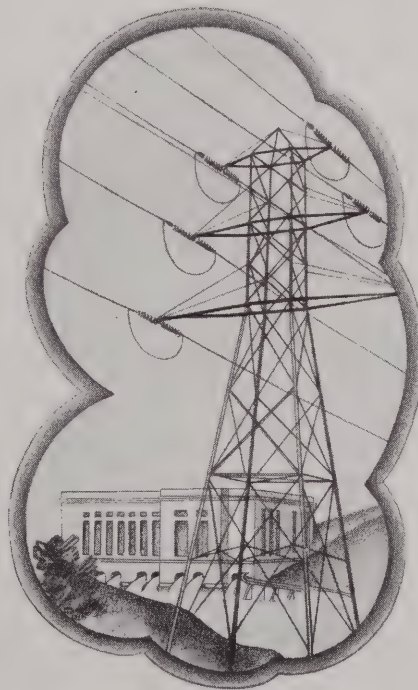
Although the foresters are noted for their social functions, they are, in reality, an earnest group of student woodsmen. The Club attempts to keep its members informed on the latest developments in their field.







The  
Department of  
**ELECTRICAL  
ENGINEERING**







G. W. SWENSON

## ELECTRICAL ENGINEERING

One day Ben Franklin decided to go fly a kite. Little did he realize that just about 150 years from then, there would be repercussions. Far up in the north men would be wiring, experimenting, and designing, all for the sake of electricity. If Ben had only known.

Down through the ages men began to wonder if maybe they couldn't do something with the energy that made up the lightning in the air. Some dreamed of an age where great trains would move heavy loads and freights powered by this stuff of the gods. There would be some way to store this power so that it would furnish light and heat for the world. Today, through experimentation, many students have learned that this may someday come true.

Someday, after all the different waves are plotted and the results graphed, electrical engineers will find some useful application for electricity.

Professor Swenson, whose home town is Willmar, Minnesota, graduated from the University of Minnesota in 1917, then returning for his Master's degree in Electrical Engineering which he received in 1921.

After having received his Master's degree, Professor Swenson was employed as a telephone engineer by the Western Electric Corp. This lasted for only a short time, as he returned to his Alma Mater to be an instructor and Assistant Professor in the Electrical Dept. He kept that position until 1928 when the Michigan Tech Electrical Engineering Department was organized under his direction and guidance. This marks twenty years in his capacity as Head of the Department in addition for being a counselor for this period.

Professor Swenson is associated with many organizations. Among these, he is chairman of the Great Lakes District Student Branch Committee of A.I.E.E. and also chairman of the Electrical Division of the American Society for Engineering Education.

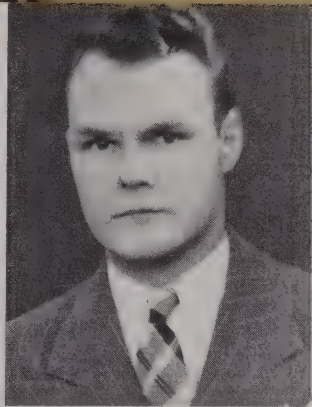
The A.I.E.E. has given him the title of Fellow, and he belongs to Tau Beta Pi and Eta Kappa Nu, both of which are honorary fraternities. Among the professional fraternities, he belongs to Kappa Eta Kappa and the Service fraternity Alpha Phi Omega.

On top of this formidable array of honors, he is also an author of an Electrical Engineering Text and various professional papers.

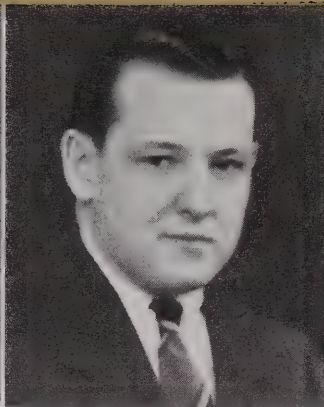
Observe the ordinary student engaged in the study of this phenomenon. After four hard years of constant labor he has successfully developed a device which, when placed under the cushion of a chair, will give the unfortunate occupant an extremely large charge. He has succeeded in compacting this gadget into a size which will fit into the palm of the hand. This portable electric chair is carried to all parties and social gatherings. It has never failed to evoke hearty chuckles. Of course at AIEE meetings each man carries one, with results that are mutually shocking. Have you ever seen a hundred electrical engineers, in parallel?

After graduation this product of Michigan Tech emerges to take his place in industry. He follows in the footsteps of the great scientists of the past. He blazes new trails in the research and development of his field. And, after all... someone has to replace the fuses...

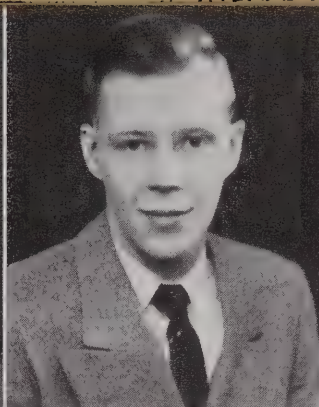




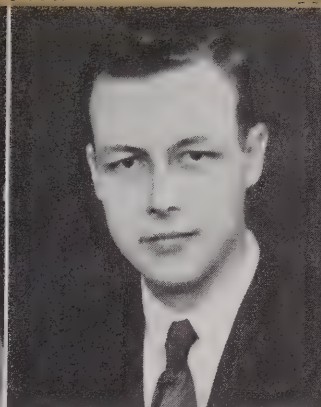
F. Tabor



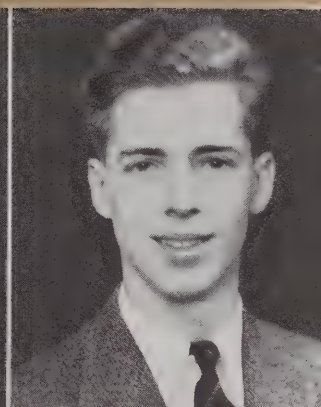
R. Simonson



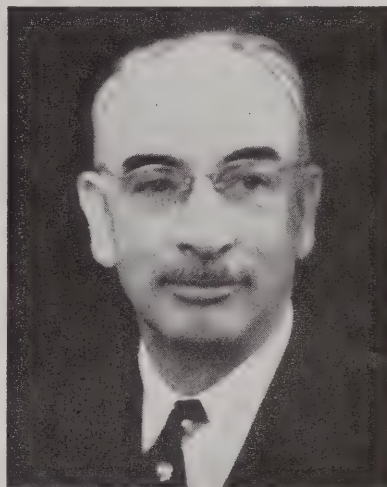
G. Liljeblad



M. Henderson



F. Dudey



L. A. Sears

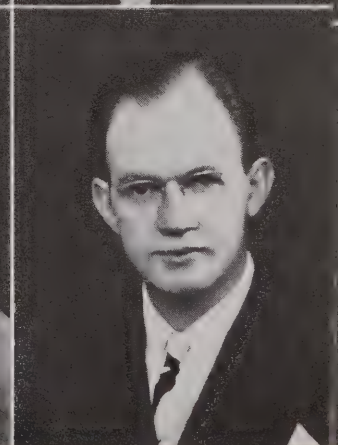
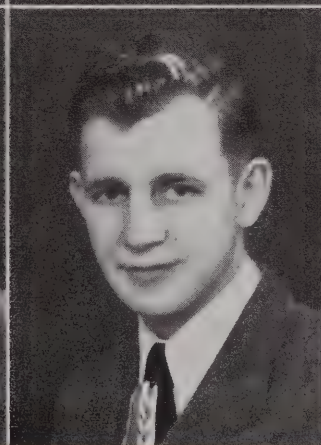
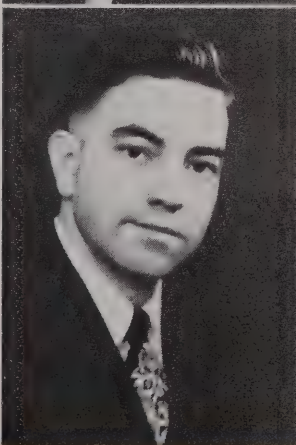
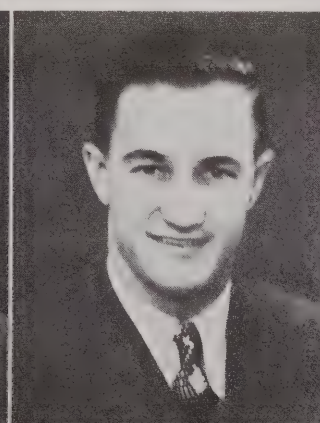
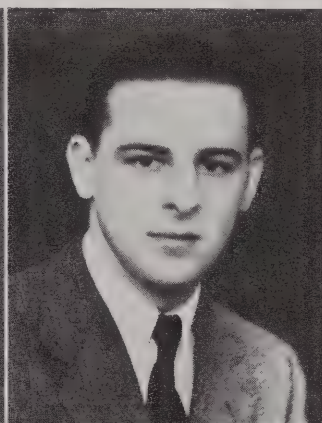
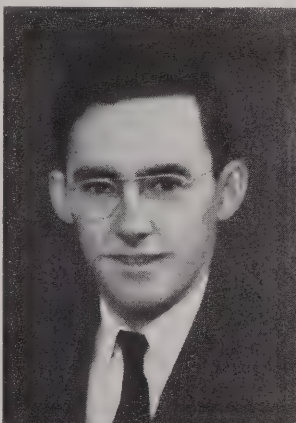
J. Brule  
G. Morin

J. Augustine  
S. Cota

H. Blakeney  
J. Wittock

W. Clark  
V. Mikulich

J. LaDuke  
T. Gebhard







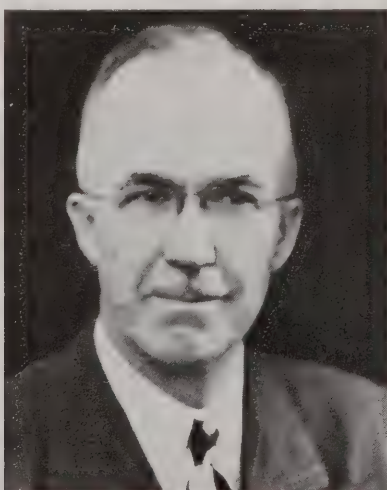
B. Hodges  
J. Carlson  
K. Dudey

M. Wertanen  
H. Douglas  
R. Gresham

H. Drewry  
L. Luder  
K. Anderson

V. Zanella  
J. Boerma  
H. Richards

J. Wiseman  
T. Breitmeyer  
F. Sener



V. O. York

B. Penokie







C. S. Schjonberg

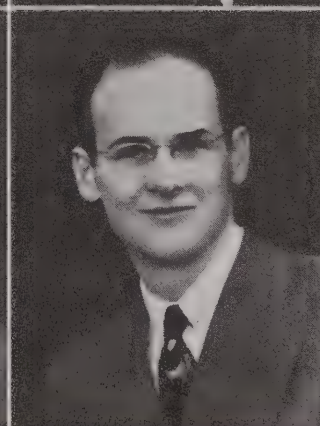
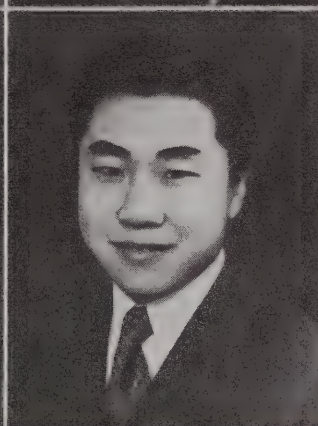
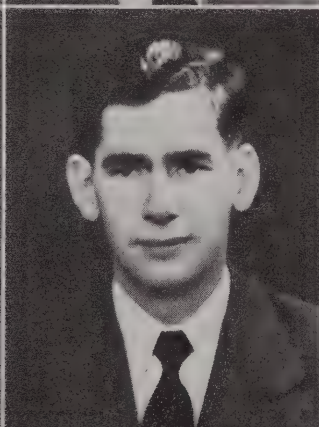
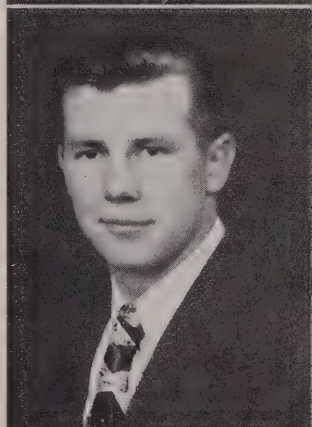
G. Rehnquist  
H. Noponen  
A. Stopar

R. Stallard  
W. Van Effen  
M. Siepak

R. Dejka  
W. Loosemore  
C. Fu

F. Rausch  
I. Lillvis  
E. Finnegan

P. Käuppila  
R. Luttinen  
F. Gyga



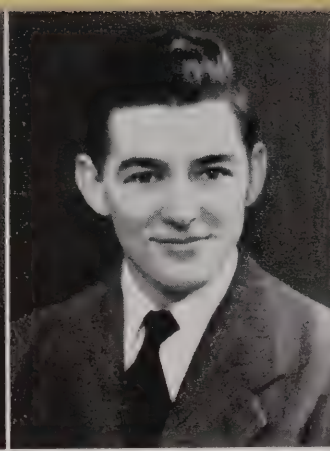




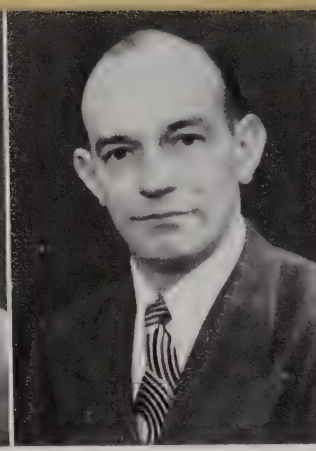
P. Goethe



J. Thomas



J. Bellack



M. Smith



W. Olson



W. T. Anderson



G. E. Bahrman

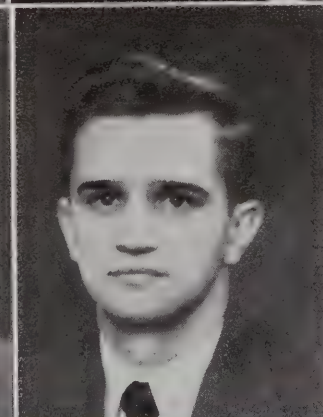
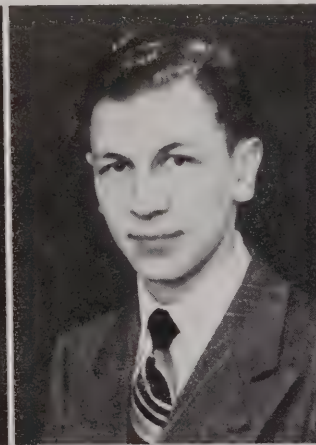
V. Kempinen  
H. Hazebrook

W. Miller  
R. Pierce

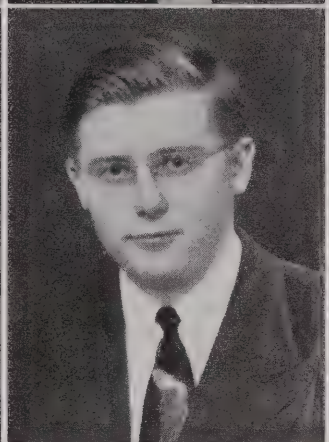
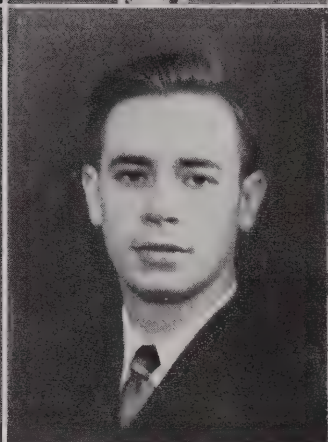
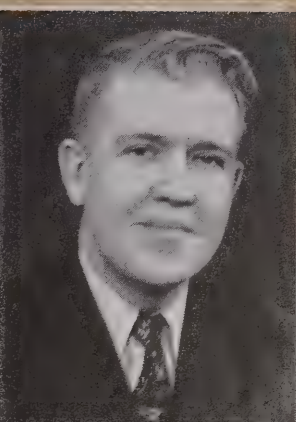
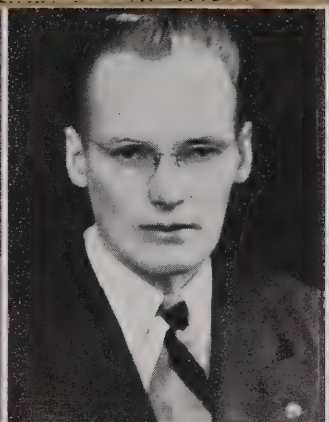
F. DeSautel  
V. Miklas

A. Kazmiercak  
J. Klungness

E. Galbraith  
G. Barr







G. Moon  
J. Voyles

B. Prisk  
W. Allen

W. Rautio  
N. Peltokangas

R. Browning  
R. Gilbert

J. Romberg  
J. Beumer, Jr.



R. N. Belanger



E. E. Hafkemeyer

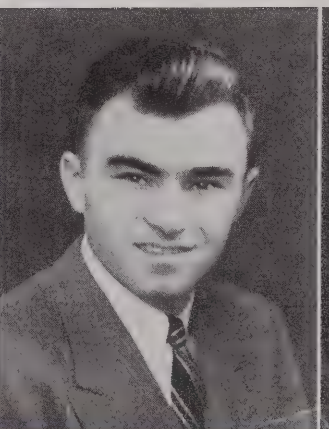
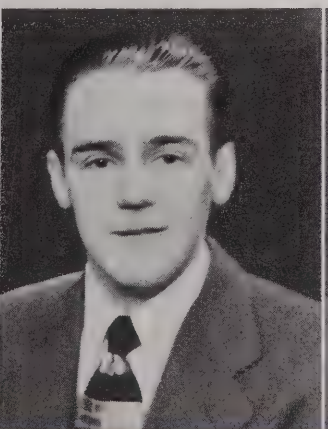
G. Ferdon

H. Stowitts, Jr.

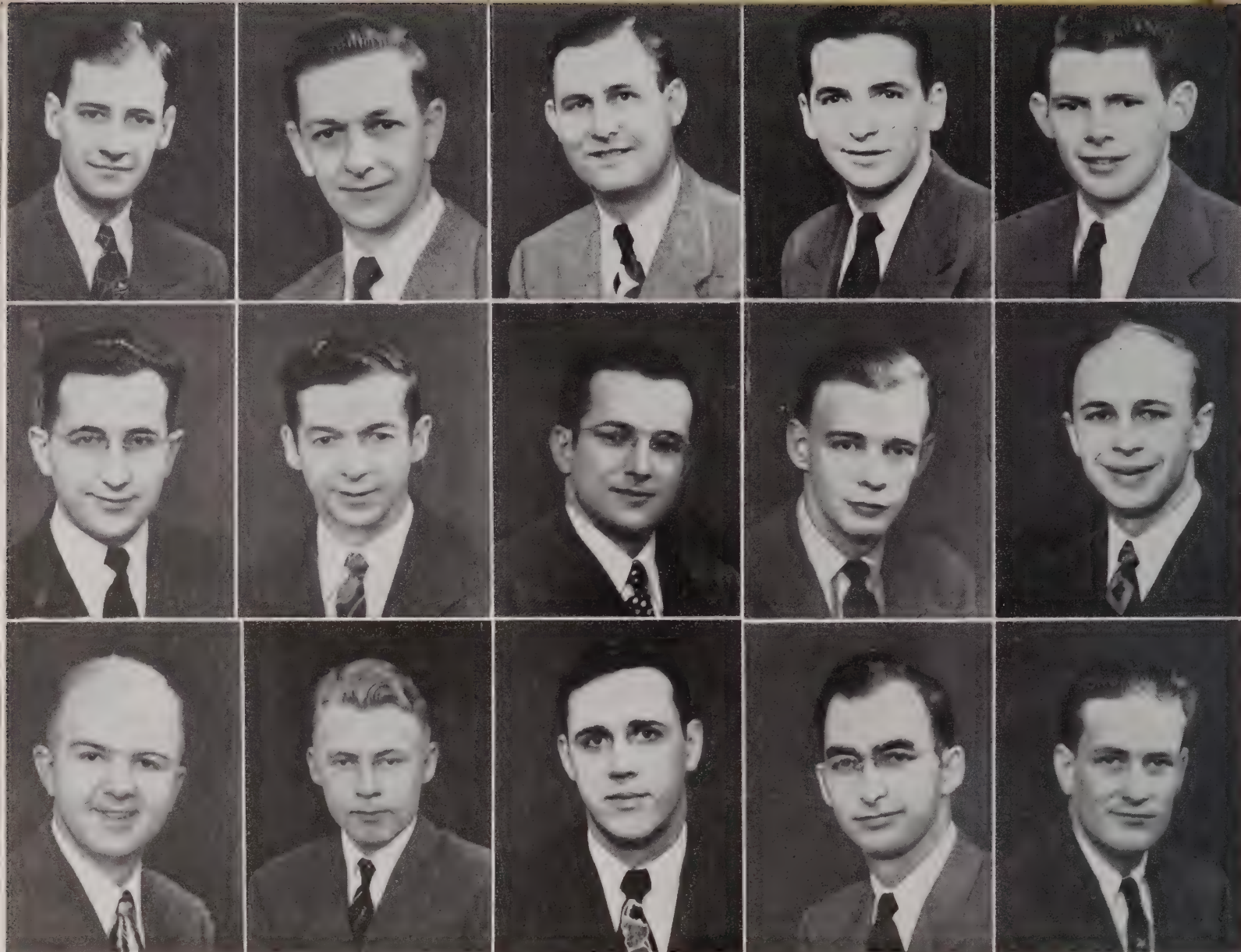
R. Taylor

E. Mansfield

D. Knapschaefer







R. Perdzock  
A. Lewandowski  
A. Swanson, Jr.

J. Freeborn  
W. Freeborn  
W. Auday

W. Hanson  
R. Bogdan  
R. Masnaghetti

P. Smith  
G. Nowak  
G. Spratt

F. Rice, Jr.  
F. Karkoski, Jr.  
B. Thielan

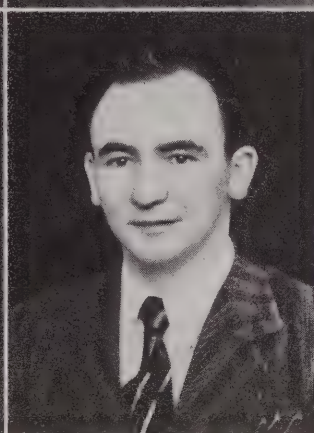
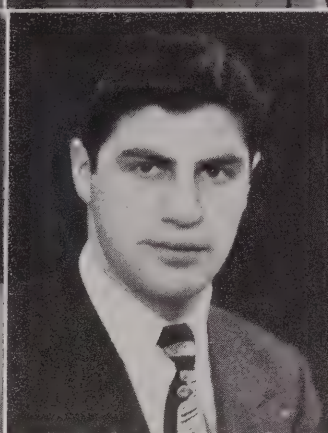
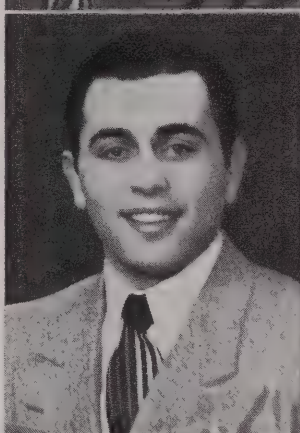
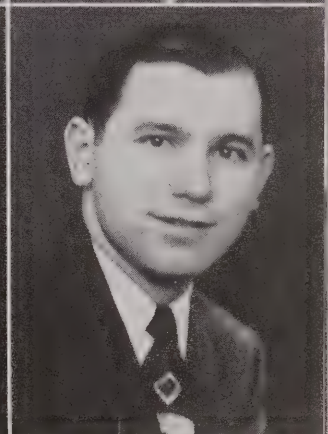
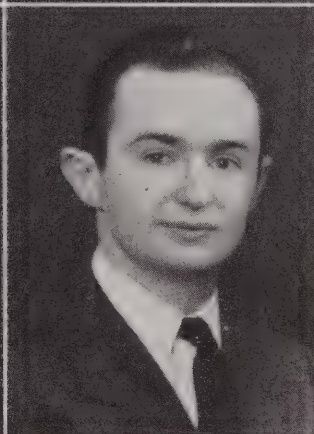
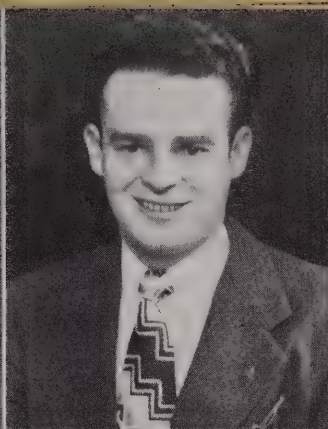
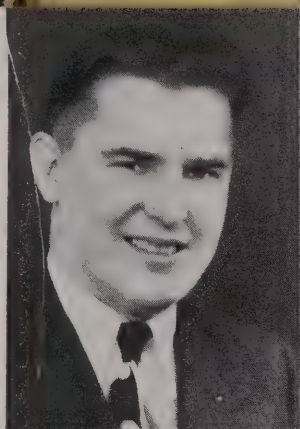
L. Stanton



P. Lund







W. Green  
R. Saviniemi

K. Pekarek  
M. Siekierski

O. Hedberg  
G. Bergstrom  
J. Yared

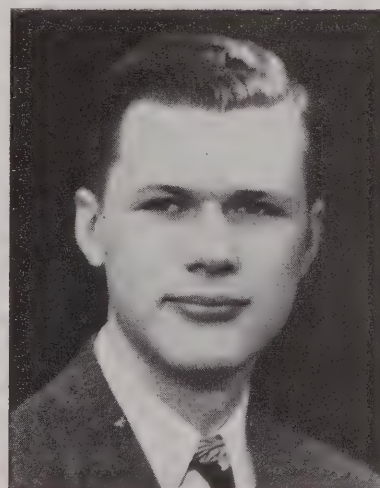
J. McKenna  
I. Pines  
D. Ewing

W. Hall  
T. Harrison  
C. Rivard

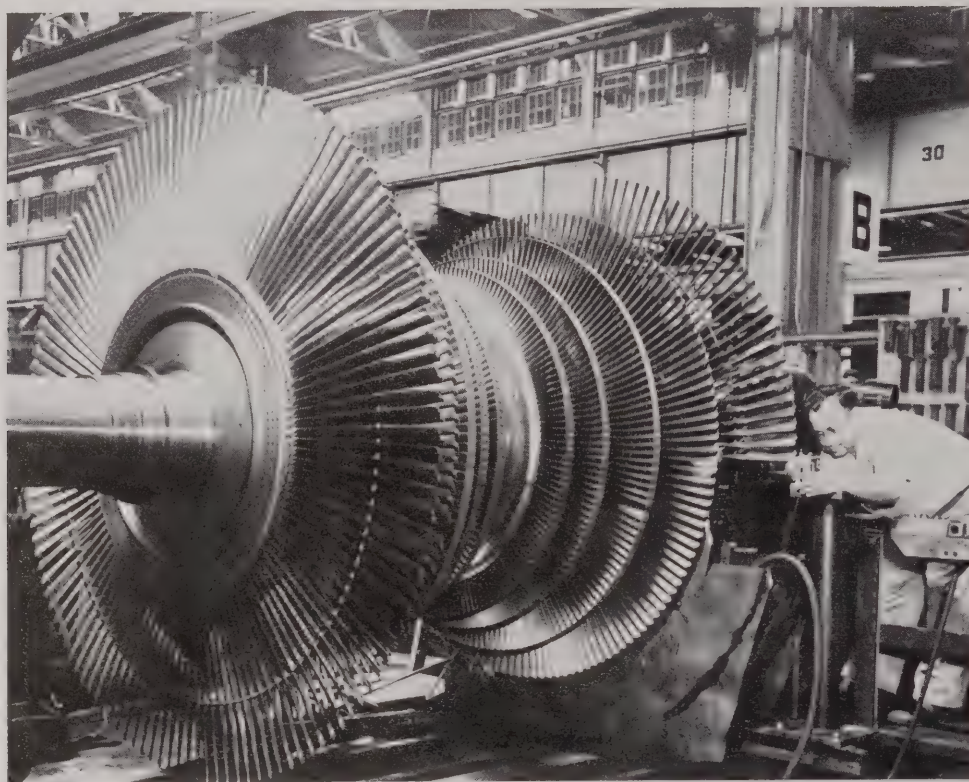
F. E. Pratt



M. S. Lind







## JUNIOR ELECTRICAL ENGINEERS



FIRST ROW: E. Lind, H. Smith, J. Seeley, J. Herron, A. Crockett, J. Cencich. SECOND ROW: R. Matel, B. Chenoeth, D. Sleeman, C. Clifton, P. Sneide, J. Tolleson. THIRD ROW: 1. R. Park, 2. Unidentified, 3. Unidentified, 4. R. Burgess, 5. R. Thome.



## SOPHOMORE ELECTRICAL ENGINEERS



FIRST ROW: L. R. Zellmer, D. R. Kessler, H. A. Zollinger, W. S. Johnson, Jr. SECOND ROW: A. Tarbay, R. L. Carlson, H. J. Hansen, L. A. Wixtrom.

## FRESHMAN ELECTRICAL ENGINEERS



FIRST ROW: R. C. McMaster, G. Petersen, A. J. Co'ace, R. G. Erickson, E. Szidik. SECOND ROW: E. E. Walimaki, J. H. Baker, J. R. Wooland, S. S. Cogswell. THIRD ROW: K. Van Ess, L. M. Krupp, C. Eigenauer, P. Hanuscak, R. Schmitz.





FIRST ROW: E. D. Finnegan, T. Stowitts, D. W. Cargo, V. J. Zanella, A. W. Hall, L. J. Sundlie SECOND ROW: J. D. Brule, S. W. Cota, W. R. Olson, D. C. Ewing, T. C. Gebhard. THIRD ROW: H. R. Richards, J. L. Voyles, J. R. Wiseman, J. Klungness, P. C. Perdzock, R. E. Green.

## ETA KAPPA NU

Eta Kappa Nu is a national honorary electrical engineering society founded in 1904 at the University of Illinois.

While the qualifications for membership distinctly stimulate and reward high scholarship, Eta Kappa Nu has a far broader purpose than merely to award a badge of distinction. As conceived by its founders and as carried forward by its membership during more than two generations, its aim is to assist its members throughout their lives in becoming better men in their chosen professions and better citizens. In return, it is another purpose of the organization that its membership be a constructive force, helping

fellow members and non-members alike in improving the standards of the profession, the courses of instruction, and the institutions where its chapters are established.

Each undergraduate chapter and each alumni chapter is carrying out these ideals in the manner best fitted to its individual needs. A national organization, elected by the chapters, exercises general supervision and correlates the efforts of these groups. A bi-monthly magazine, *The Bridge*, keeps the members informed of the organization's activities and forms a means of contact between graduates and undergraduates.





FIRST ROW: J. M. Gray, D. J. Meyers, B. C. Prisk, T. C. Gebhard, T. E. Laurila, J. L. Voyles, C. Fu, M. Wojnar, R. G. LaForrest, B. C. Penokie, A. B. Swanson, J. H. Baker. SECOND ROW: C. Wellman, A. F. Chynoweth, M. E. Smith, H. W. Noponen, W. J. Van Effen, A. V. Kazmierczak, R. J. Simonson, K. L. Pekarek, E. Szidik, P. W. Kauppila, T. M. Harrison, F. A. Rausch, J. A. Wittcock, J. L. Freeman. THIRD ROW: F. M. Eastland, H. J. Reed, G. J. Trusock, F. L. Tabor, W. R. Olson, F. H. Gygax, R. G. Burgess, L. R. Zellmer, A. Tarbay, R. T. Matel, P. K. Goethe, M. W. Henderson, R. W. Gresham. FOURTH ROW: B. J. Thielan, I. Lillvis, O. F. Hædberg, W. C. Hall, R. G. Thome, F. R. DeSautel, E. W. Mansfield, L. S. Luder, R. K. Masnaghetta, A. E. Lewandowski, K. F. Dudey, F. K. Dudey, D. H. Knapschaefer, R. E. Green, J. Beumer. FIFTH ROW: G. A. Ferson, F. D. Sener, R. R. Dogdan, R. C. Perdzock, W. H. Miller, D. R. Kessler, J. D. Brule, H. S. Drewey, P. Hanuscak, C. Clifton.

## AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS

This year the Student Branch of the A.I.E.E. celebrates its twentieth anniversary. This professional organization has shown a remarkable growth from the small number in 1928 to the present membership of 157.

In the past year the Student Branch has conducted a progressive program within the Electrical Department. A scholastic award was presented to Robert Tollefson at a banquet on January 25 at the Douglas House. He maintained the highest scholastic record

of all students enrolled in the Electrical Engineering Department during the fall term.

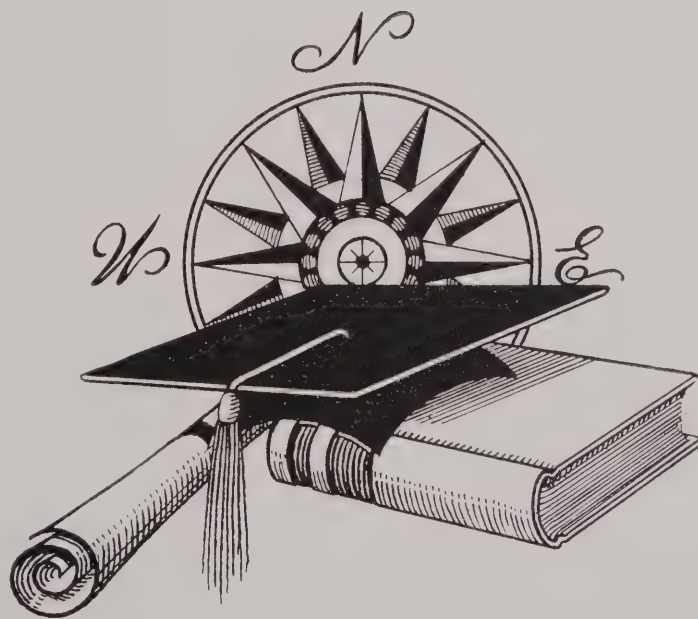
In the spring term another award is to be presented to the senior who submits the best technical paper. The winner of this award will also accompany the incoming chairman to the Great Lakes District A.I.E.E. Convention at the University of Michigan in Ann Arbor. There he will present his technical paper in competition with other schools of the Great Lakes District.







The  
Departments of  
**GENERAL  
ACADEMICS**







J. M. HARRINGTON

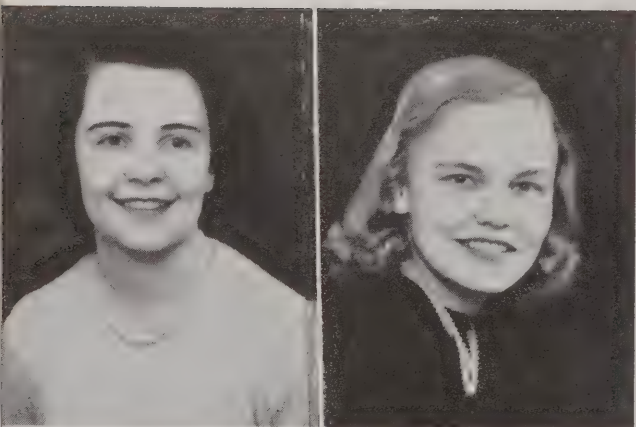
Heading the Department of Mathematics of the Michigan College of Mining and Technology is Professor John M. Harrington. His appointment in July, 1944 was the result of the retirement of Dr. James Fisher.

Professor Harrington is a graduate of the Michigan College of Mining and Technology and received the B.S. and E.M. degrees from this institution. He also holds the Ph.M. degree from the University of Wisconsin.

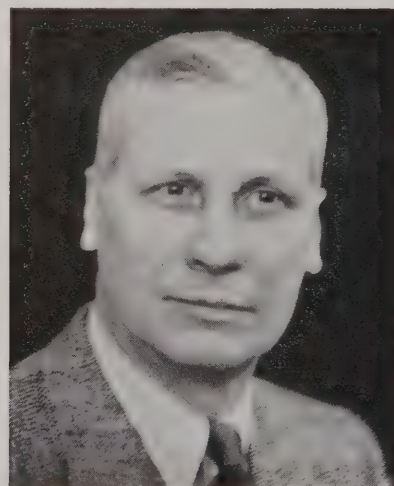
His professional organization memberships in mining and engineering societies include The American Association for the Advancement of Science.

He is a member of Tau Beta Pi and Theta Tau Fraternities and also is a member of the Lions Club and the American Legion. Professor Harrington is listed in "Who's Who in Engineering."

## MATHEMATICS



S. Lund  
E. Abramson



Dr. C. G. Stipe





Earl Roberts



G. G. Strucel



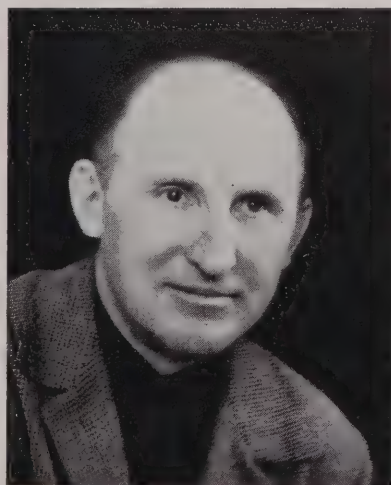
Donald Shell



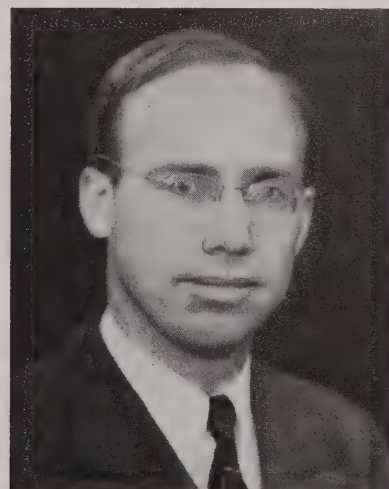
T. E. Vichich



P. V. Anderson



Ralph Rodefer



H. B. Anderson





**B. B. BENNETT**

Heading the Department of Languages at Michigan College of Mining and Technology is Professor Burney B. Bennett.

Professor Bennett is a graduate of Kalamazoo College, receiving his A.B. degree from that institution. He obtained his M.A. degree at the University of Michigan, where he has also completed considerable additional graduate work.

Professor Bennett left the Michigan College of Mining and Technology staff to serve with the U. S. Navy. He was released from active duty with the rank of Lieutenant.

Professor Bennett holds membership in the National Speech Teacher's Association, the American Society for Engineering Education, and the American Association of University Professors. He is also a member of Blue Key Fraternity, Kappa Delta Psi Fraternity, and the U. S. Naval Reserve. Professor Bennett is listed in "Who's Who in Education."

Appointed Head of the new Department of Engineering Administration is Associate Professor Ernest J. Townsend, who is also Assistant Treasurer of the college.

Professor Townsend is a Michigan Tech graduate, and holds the B.S. and M.S. engineering degrees. He has worked for the Michigan Planning Commission as a field representative and municipal planning consultant. In 1944, he was Secretary of the Copper Country Division of the Committee of Economic Developments.

Professor Townsend holds membership in the American Society for Engineering Education and Tau Beta Pi and Kappa Delta Psi Fraternities. He is also the author of numerous articles and economic reports.



**E. J. TOWNSEND**

Since 1939, Dr. Ella Wood has been Professor and Head of the Department of History and Geography. Dr. Wood is a graduate of Milwaukee-Downer College, receiving her B.A. degree from that institution. She obtained her M.A. and Ph.D. degrees from the University of Wisconsin.

Dr. Wood is widely recognized in the Upper Peninsula as an authoritative speaker on foreign affairs.

Dr. Wood is a member of many professional organizations. She is also a member of Sigma Xi, Sigma Delta Epsilon, Theta Chi Epsilon, and Phi Beta Kappa.



**DR. ELLA WOOD**





T. Pearce



N. Greifer



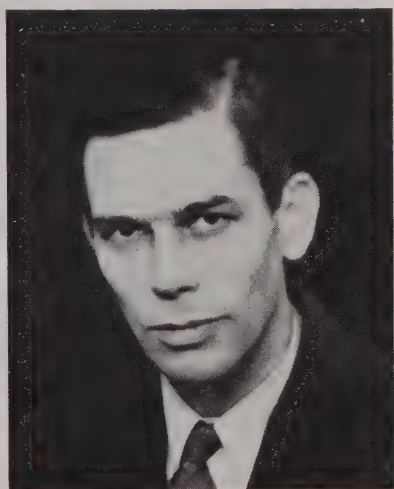
D. E. McFarland



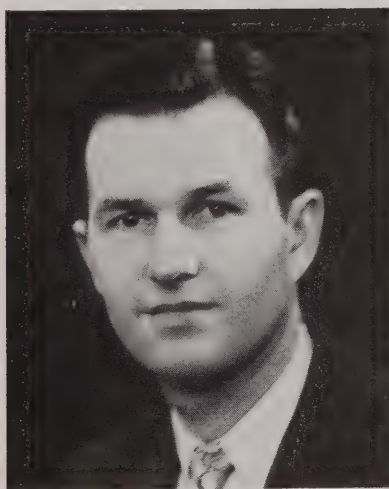
T. N. Smith



H. G. Denning



C. R. Moss



C. W. Webster



C. N. LaDuke





Slipstick Serenade



Did someone say this is college?



Wow, look at those legs!

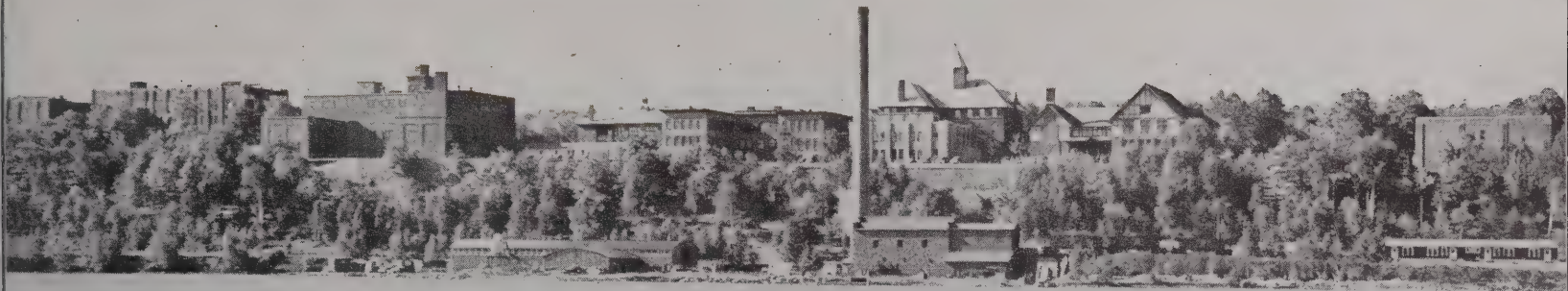
Blood shot eyes



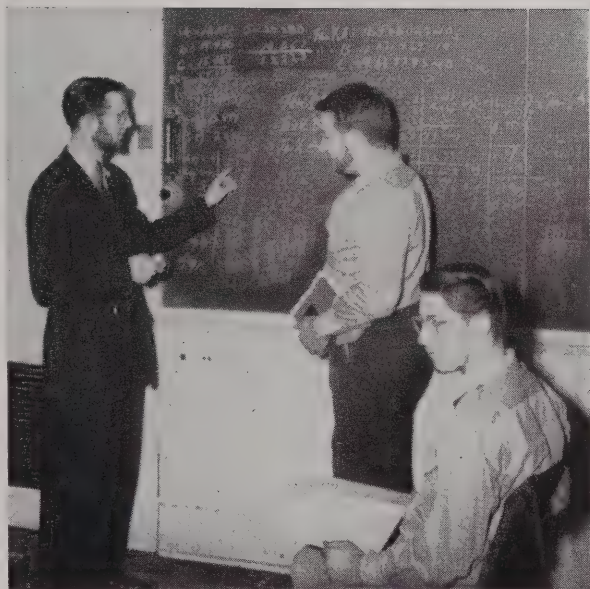
Taking 5



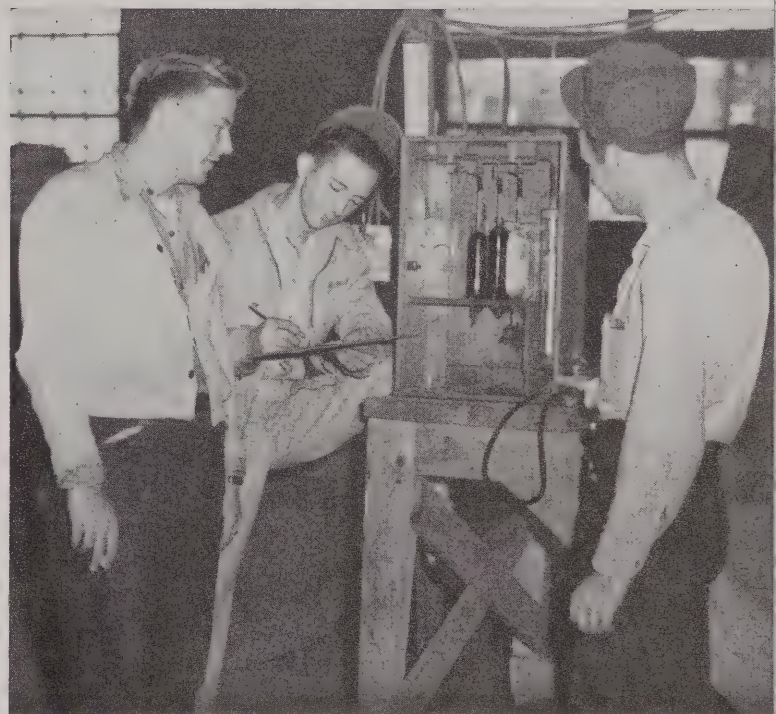




Da Tech (Beach comber's view)

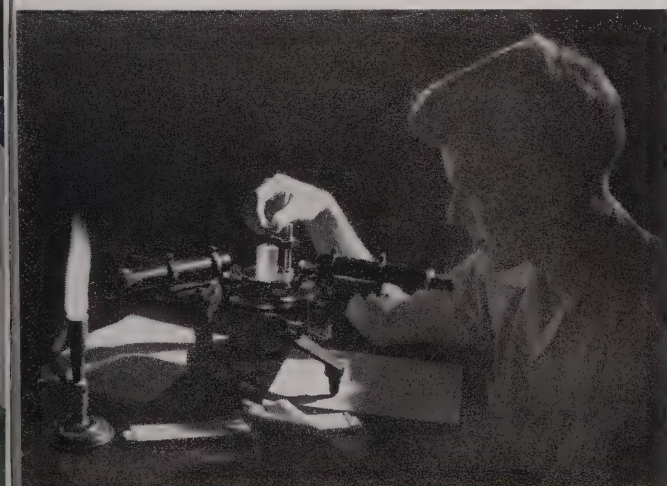


Winter term



Summer term

Gee, what pretty colors!

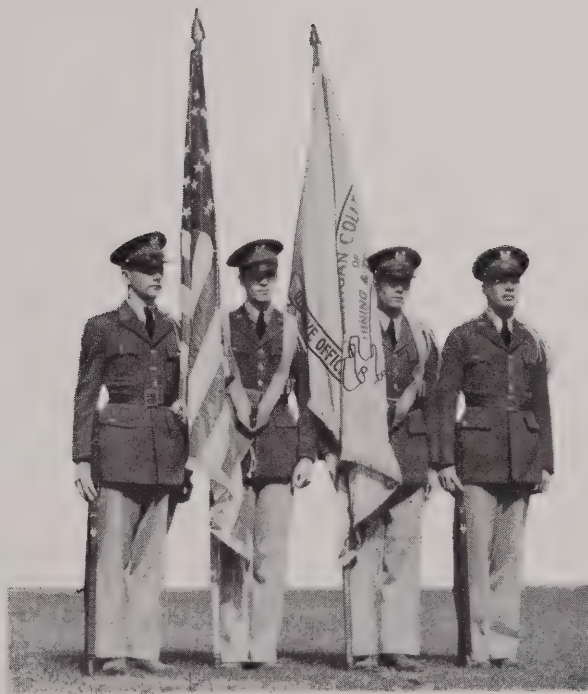








The  
Department of  
**MILITARY SCIENCE  
AND TACTICS**







LT. COLONEL W. S. SHOEMAKER

Professor of Military Science and Tactics and Head of the Reserve Officers' Training Corps at Michigan College of Mining and Technology we have Lt. Colonel Wm. S. Shoemaker.

Colonel Shoemaker received a B.S. degree from the School of Engineering of George Washington University. His non-military engineering experience has been with the United States Coast and Geodetic Survey, National Bureau of Standards and the Interstate Commerce Commission.

During World War II he was placed in command of engineering battalions in the Caribbean area and the Pacific Theater of operations.

Colonel Shoemaker holds membership in the Elks, the Sojourners and the Heroes of '76. He is also a member of the Masonic Order.



Major V. W. Boresch



Major R. C. Goodwin



Major T. L. Thacker



First Lt. Milan Sassic



M/Sgt. R. M. Morris  
M/Sgt. R. H. Smith  
T/Sgt. G. Carpenter



S/Sgt. W. H. Pyne  
S/Sgt. Kirol Holme  
S/Sgt. D. S. McNamara

R.O.T.C. at "Present Arms"





## TAU NU TAU



FIRST ROW: M. S. Siekierski, D. L. Corbin, Wm. S. Shoemaker, F. H. Gygax, C. J. Robirson, G. J. Clay. SECOND ROW: J. P. Evans, P. C. Ellsworth, W. Raketich, R. J. Berg, A. E. Lewandowski, G. A. Nowak, L. E. Larson, P. G. Goodreau. THIRD ROW: E. See, R. Poppe, R. Pearce, D. G. Chase, J. M. Jahara, J. R. Siewert, R. J. Neubacher.

## R. O. T. C. RIFLE CLUB



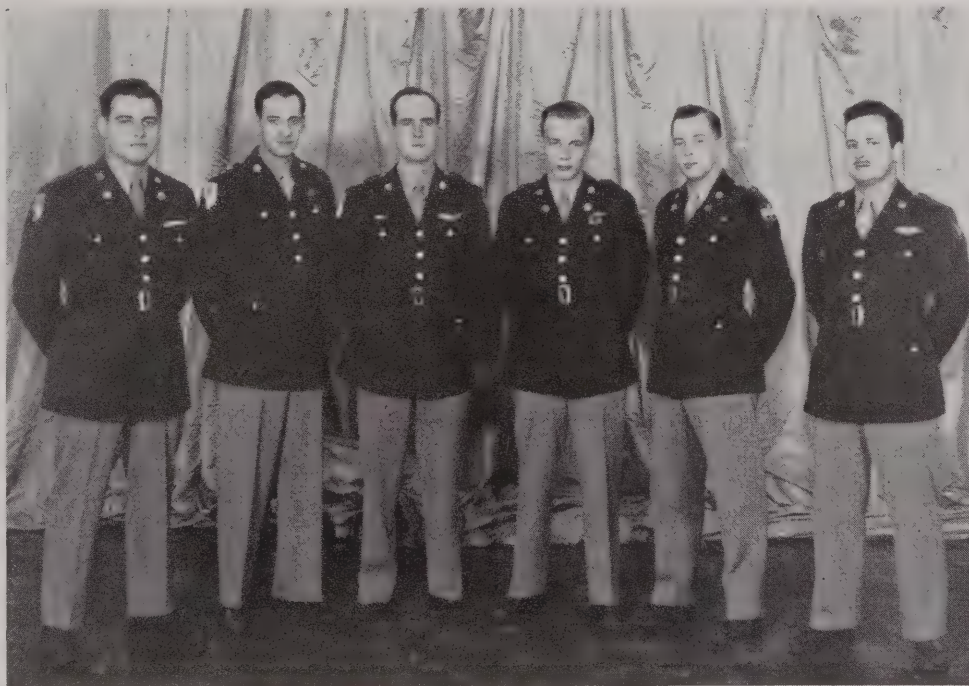


## SIGMA ALPHA



FIRST ROW: K. R. Hakala, W. R. DeKeyser, W. J. Besaw, R. Perdsock, R. L. Pierce. SECOND ROW: A. G. McDonald, F. P. Sener, R. J. Scanlan, A. A. Hanninen, T. L. Thacker. THIRD ROW: P. W. Berkelman, W. H. Risteen, W. J. Lux, J. L. Voyles, G. W. Schewe.

## MILITARY COUNCIL



R. J. Neubacher, R. Perdsock, R. J. Scanlan, G. A. Nowak, F. H. Gygax, A. R. LeCompte.







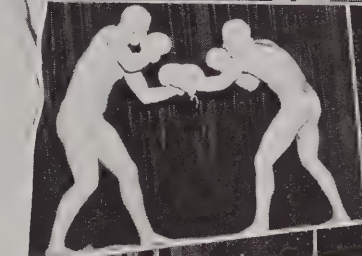
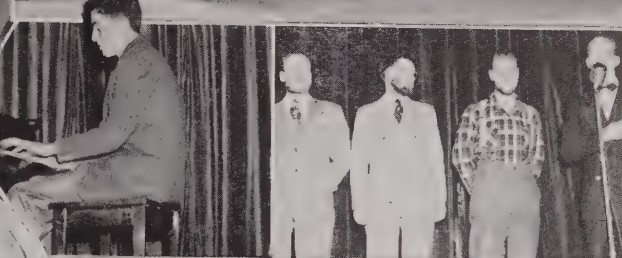
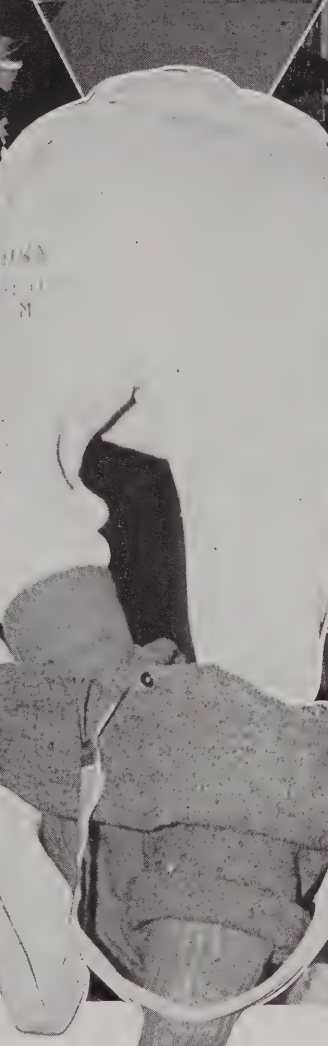
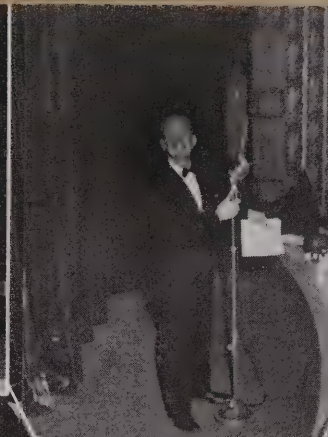
# WINTER CARNIVAL









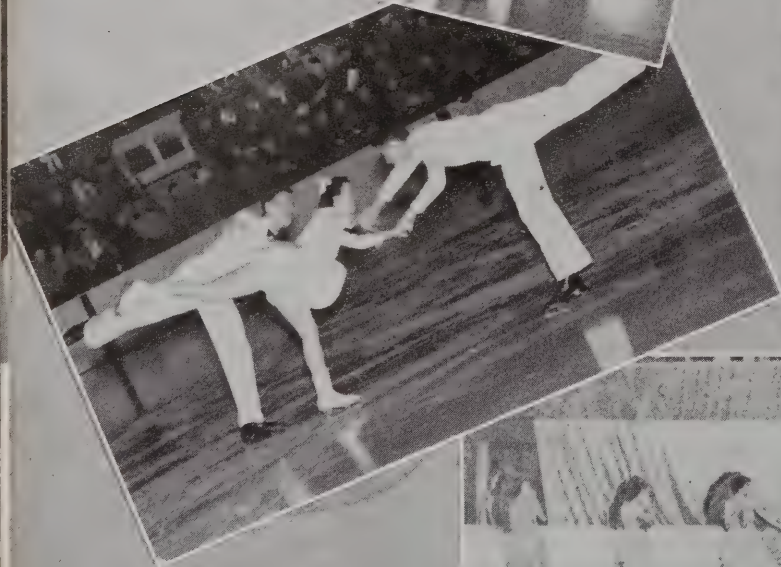


Winter Carnival, when the beards appear on the men and the one and only appears on the campus. The time when the engineer is done with his work, for the present, and seeks the simple pleasures of the carnival weekend in Houghton.

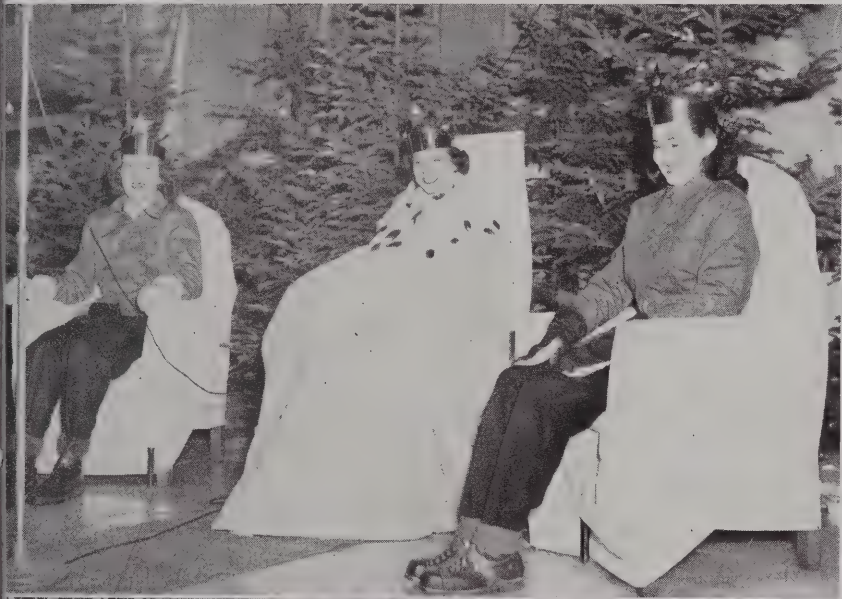
Somehow, it's hard to pick out the biggest event of the week. But the whole theme is winter ... skating and skiing, hockey, and the Queen of the North. The excitement of the games at Dee Stadium to the nostalgic feeling as the last train on Sunday pulls away.



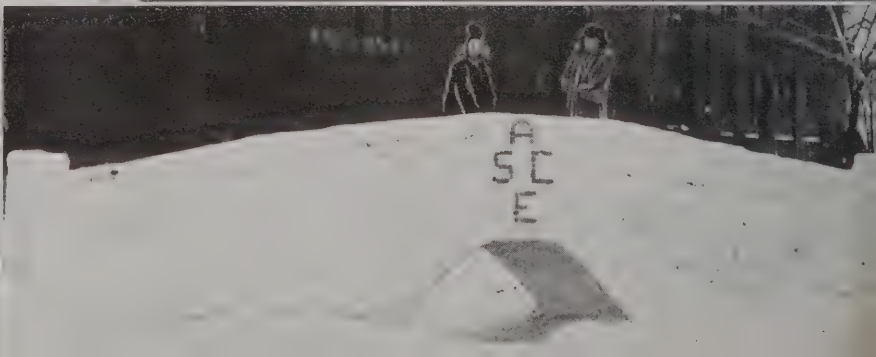
























FIRST ROW: B. Lovell, J. Klungness, M. Veidman, E. Snyder, B. Wallace, L. Hanson. SECOND ROW: B. Hikes, W. O. Tschantz, F. A. Reed, R. L. Pierce, R. J. Alkema, J. L. Voyles, G. Tinetti, D. C. Ewing, J. C. Price, K. Bucklund, M. Koenders. THIRD ROW: N. Mascioli, P. M. Smith, A. G. Bernholdt, Jr., E. See, C. J. Staskiewics, L. J. Luder, H. R. Richards, J. Hangeland, M. M. Olson, N. C. Pogacich, A. Henry.



Blue Key, National Service Fraternity, was founded in 1924 at the University of Florida, the Michigan Tech Chapter being inaugurated in 1932. The purpose of the organization is to promote and stimulate worthwhile student activities.

Members are chosen in recognition of their interest, participation, and leadership in student activities and their willingness to work to improve their

college and the activities which will enrich student life on the campus, scholarship being a secondary requirement.

Outstanding among its projects is the Winter Carnival, and members of Blue Key may be justly proud of this year's successful presentation of this highlight of campus activities.







# FRATERNITIES





# DELTA SIGMA PHI

The first year is always the hardest . . . and for the men of Delta Sigma Phi who are just completing their first year in their new house, the statement was proved correct once again.

Through the efforts of the chapter officers and advisors, the technical and financial details involved in purchasing the former Coeds' Dorm were ironed out last September in time for the start of the fall term. Using boxes and crates for desks, chairs, and dressers, the stalwart residents managed to sweat out the delivery of the furniture and kitchen equipment which would spell normal living.

Two pledge classes this year held the ranks of the chapter fairly constant despite the loss of thirty-two seniors in June. Delta Sig pledges won the contest for the best costumes at the Sadie Hawkins Day Dance last November, and the ten dollar prize was a most welcome morale booster at the height of their pledging activities.

The Carnation Ball in December, Homecoming, and naturally the Winter Carnival were all festive occasions for Delta Sigs, not to mention the other parties, sleighrides, etc. which helped to make the year a social success.

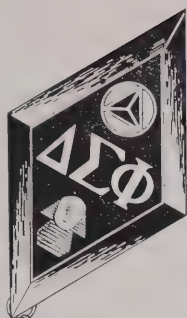
Intramurals presented a much brighter picture this year than last. Sporting new green and white uniforms, the cagers put a smooth-working team on the floor, and not many opponents ended up on the long end of the score. Hockey was another story, however. Defeat was the constant medicine administered to the battered and bruised pucksters who, nevertheless, played every game with determination and vigor. The results of the baseball season this spring are yet unknown, but don't count the Delta Sigs out.

If the first year really is the hardest, the men of Delta Sigma Phi can breathe easily now. They've weathered the storm and nothing but continued success and prosperity lie ahead . . .

FIRST ROW: R. Bunney, K. Pinnow, P. Lewis, R. Youngblood, R. Rasmussen, F. Gyax. SECOND ROW: G. Gable, R. Harrison, R. Clevestine, J. Vrugink, J. Blum, M. Veldman. THIRD ROW: W. Glidden, D. Hon, D. Skibbe, R. Smith, R. Zanon, R. Nelson, J. Meola. FOURTH ROW: C. Pollock, A. Lewandowski, R. MacLeod, D. Martindale, A. Jarema, P. Miller, V. Little, L. Kivisto, J. Deli, C. Ahlstrom, W. Ward.



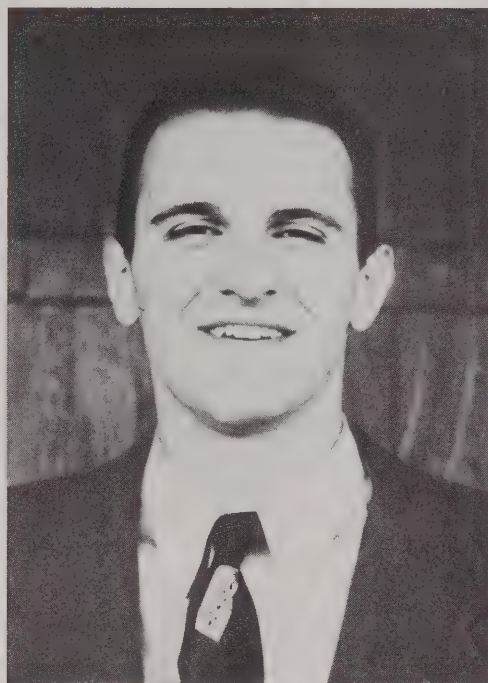




# OFFICERS

President .....	W. H. Kimble
First Vice-President .....	R. R. Smith
Second Vice-President .....	D. H. Skibbe
Secretary .....	R. J. Carlson
Treasurer .....	Rex Harrison

BΠ



FIRST ROW: D. Saxon, H. Stowitts, H. Smathers, W. Van Effen. SECOND ROW: K. Arntzen, H. Zollinger, J. Vitton, D. Acciani, W. Kimble, R. Freeman, R. Nelson. THIRD ROW: R. Watkins, M. Siekerski, A. Kazmierziac, T. Hruby, C. Stazkiewicz, E. See, T. Hecker. FOURTH ROW: R. Woelk, C. Hanson, L. Fry, D. Cota, R. Berg, W. Racketich.







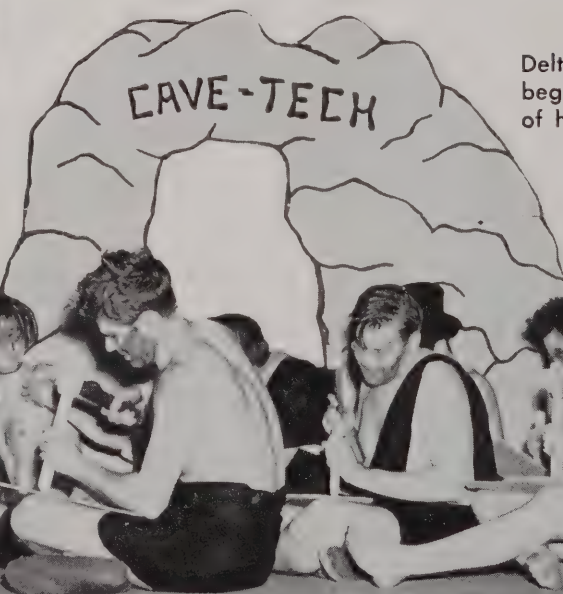
Three of the members always dress for dinner.



Sometimes it's dog-gone nice to relax.



.....and sometimes to dance.



Delta Sigma Phi had its beginnings in the dawn of history.



"For Every Pledge There's a Paddle, .....



For Every Sport There's a King."

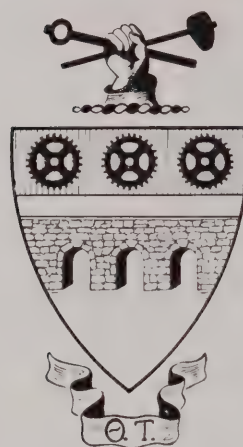
"...you will,  
of course,  
wear shoes!"



Around Homecoming

..... Δ Σ Φ "cuts up."





#### OFFICERS

Regent .....	R. L. Pierce
Vice Regent .....	M. L. Bunting
Scribe .....	K. E. Kueny
Treasurer .....	D. A. Doerr
Steward .....	D. C. Ewing

FIRST ROW: H. A. Laforet, Mr. L. F. Duggan, Dr. J. Fisher, L. W. La Forais. SECOND ROW: D. B. Sleeman, D. C. Ewing, C. D. McKereghan, H. P. Zanoni, K. E. Kueny. THIRD ROW: F. M. Shaw, R. C. Witte, K. A. Spooner, N. G. Ainslie, H. M. Lundstrom, F. E. Tervo. FOURTH ROW: J. M. Post, D. J. Leonard, R. M. Harris, R. T. Penman, V. A. Miklas, J. T. Morrow, R. W. Storm, R. W. Livingston.







FIRST ROW: J. G. Phillips, W. J. Shepeck, R. C. Steveling, J. M. Ferrell, W. C. Polkinghorne, R. L. Pierce. SECOND ROW: J. B. Bowker, D. A. Doerr, M. E. Stuk, J. E. Long, J. J. Cleary, J. A. Klunghess, E. H. Snyder, J. W. Garrett. THIRD ROW: R. G. Lovell, R. J. Peterson, G. V. Bianchini, A. F. Walter, T. E. Besemer, W. Foth, B. Hikes, M. L. Bunting. FOURTH ROW: P. A. Lundborg, A. H. Hoffman, R. E. Dunster, R. E. Johnson, D. J. Hall, C. C. Rivard, R. W. Whitney, R. J. Alkema, H. L. Day. MEMBERS NOT SHOWN: F. P. Drummond, D. S. Skufca, G. H. Mattson, E. W. Knaebel, D. R. Egeland, W. L. Barke, H. R. Smith, R. C. Sernka, D. R. Kelly, L. N. Larson, K. A. Muholand, J. J. Messink, E. R. Gaber, R. B. Ashley, D. Gerkey, R. C. McMaster.

## THETA TAU

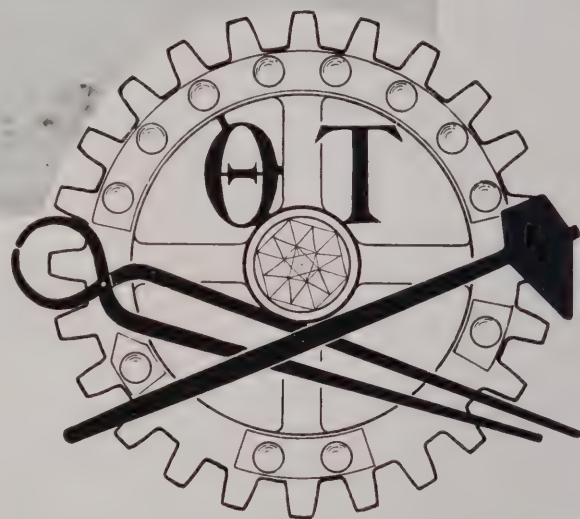
Theta Tau is a national professional engineering fraternity that has 24 chapters in the outstanding engineering schools in the country.

Since the year 1906, Beta chapter of Theta Tau has played an important part in the various organizations and activities on the campus. Whatever activity it may be, social, athletic, scholastic, or stu-

dent affairs, Theta Tau's participation is always outstanding.

The group that are H & T's is not comprised of one type of man—all classes, all departments, and all activities are represented, and for this reason life at the H & T house is never dull. There is much to learn and each has something to teach.





This year, the big project of the house was the building of a new chapter room that also doubles as a game room and party room. Work on the chapter room was started in the fall and continued on to Winter Carnival week, at which time the room was duly initiated.



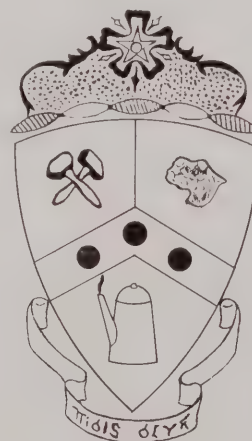








FIRST ROW: J. B. Bramblett, B. D. Collins, E. J. Fassbender, I. W. Miller, R. M. Swanson, D. E. Cardoze. SECOND ROW: G. A. Hellman, A. R. LeCompte, H. B. Sauder, R. J. Bertie, D. J. Yeadon, W. Grosser, J. B. Stepan, R. E. Wiarda, J. C. Bernard. THIRD ROW: C. F. Hoehner, F. M. Eastland, V. K. Litwinoics, R. E. Campbell, K. L. Kohler, E. M. Kuchta, M. S. Siepak, H. J. Barber, R. L. Kessler, J. D. Levin, E. Carlson, H. K. Baker, Wm. R. Johnson, N. L. Bonema, J. W. Page.



#### OFFICERS

Jack Hickey	Arcon
Leslie J. Luder	Vice-Arcon
Arthur Schultz	Secretary
Franklin S. Rice	Treasurer
Arthur Bernholdt	Steward





FIRST ROW: J. H. Hickey, Jr., F. S. Rice, Jr., A. G. Bernholdt, Jr., J. F. Murphy, A. Schultz, Jr. SECOND ROW: R. A. Larson, R. B. Chappell, G. A. Borgeson, A. Morse, D. Dibble, P. Tinetti, R. E. Randolph, A. Paradiso, W. P. Jacoms, P. C. Bilger. THIRD ROW: C. H. McNaughton, Jr., R. W. Schwaderer, D. D. Briggs, Jr., J. M. Keir, G. L. Bettens, Wm. J. Robertson, J. W. Heppler, D. W. Cargo, F. W. Freeman, A. G. Kioussis, B. Free, W. H. Sermon, R. B. Botsford, A. C. Boorman, Jr.

## SIGMA RHO

The Alpha chapter of Sigma Rho was founded at the Michigan Mining School in 1892 by ten men for the purpose of "aiding and bringing the members more closely together, to help each other, and to open new channels for the members to pass pleasantly their college days, and to assist in developing a true fraternal spirit among its members."

Sigma Rho became a National Fraternity in the year of 1910. The provisions in the constitution stating that chapters of Sigma Rho can be formed on mining campuses only, has greatly limited her growth; at present the fraternity has four chapters: the Alpha at Houghton, Michigan (1892), the Beta at Minneapolis, Minnesota (1910), Gamma at Kentucky (1922), the Delta chapter at Montana School of Mines (1927).

The social events of the year were met with bright and smiling faces. The Homecoming Parade Trophy and the Winter Carnival Stage Review Trophy now adorn the mantel of the fireplace at Sigma Rho. The Homecoming Parade first place honors were won

by a float depicting Michigan Tech Huskies pulling a large football toward the opponent's goalpost. This float was accompanied by group participation and many of the favorite songs of this campus. The Winter Carnival Stage Review first place honors were won by a quintet of dancers with a little bit of vaudeville. Sigma Rho's float in the Winter Carnival Parade, a large snowball with dancers and a five-piece band, tied for third place. The passing of the next year brings more hopes and promises of retaining these awards and adding others. Win or lose though, Sigma Rho will always be there to help boost the activities on the campus of Michigan College of Mining and Technology.

Sigma Rho has added to the social events of the year many enticing parties, picnics, and an unprecedented Faculty Member Cocktail Party. These events have been accompanied by many informal beer busts and an occasional stag party. The highlight of Sigma Rho's social calendar is the Winter Formal given every year during the winter term at the Alpha Sigma Rho Chapter House.





The Big White House on the Hill.

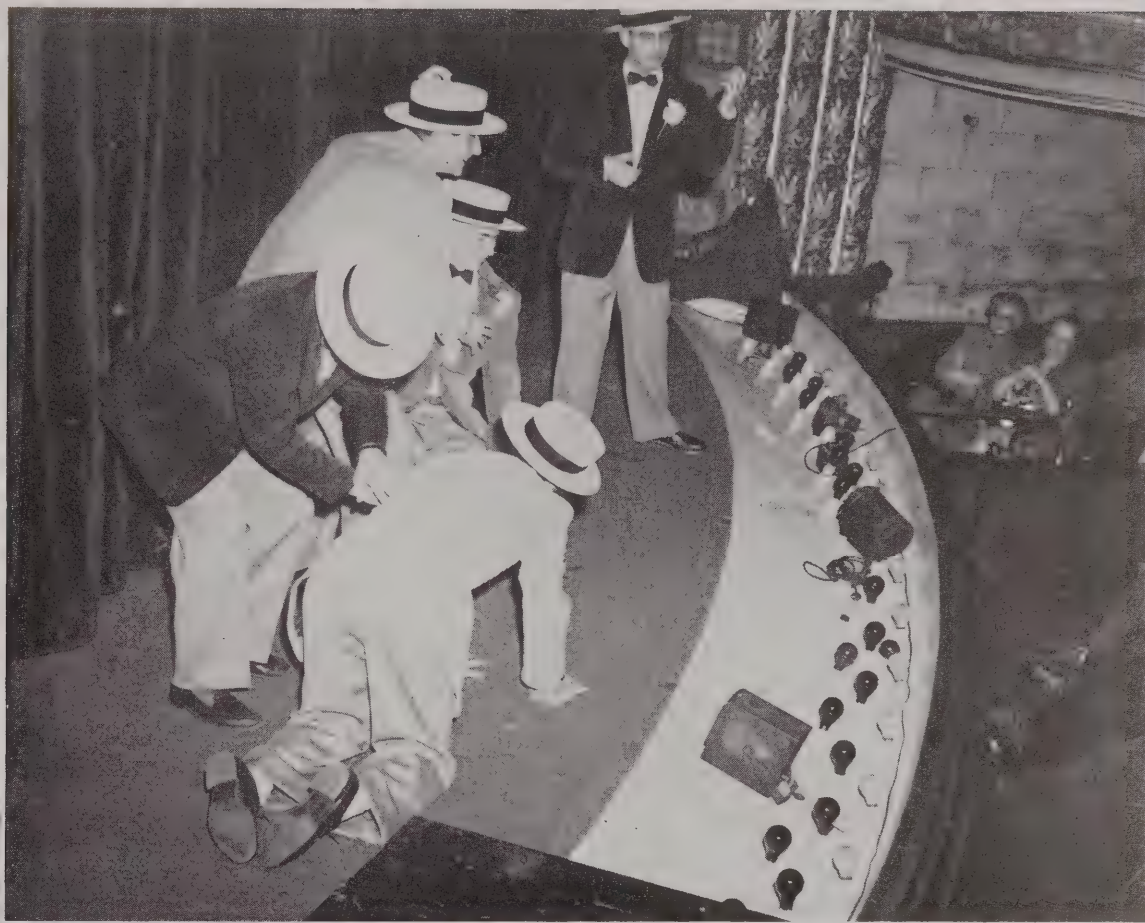


A

Parade  
Winners.







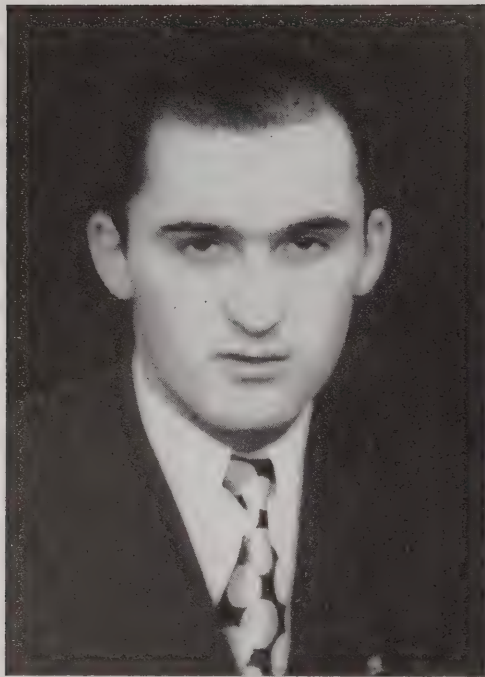
A little bit of Vaudeville.



Wait 'til the sun shines.

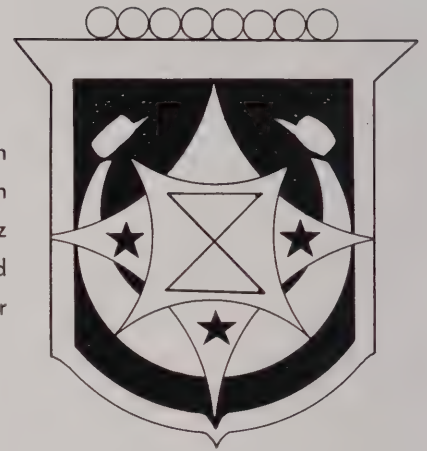






#### OFFICERS

President ..... N. C. Pogacich  
 Vice-President ..... P. M. Smith  
 Treasurer ..... W. O. Tschantz  
 Secretary ..... C. H. Englund  
 Steward ..... T. F. Breitmeyer



FIRST ROW: F. A. Reed, N. C. Pogacich, C. Peterson, C. C. Johnson, K. A. Kositzky, O. Lacombe. SECOND ROW: P. M. Smith, J. A. Winkel, I. Pines, L. J. Adams, G. J. Miatech, N. F. Mascioli, K. Buckland. THIRD ROW: A. McNay, E. Oliveira, F. Fellner, W. Tschantz, F. Charles, D. Greenawalt, G. Rehnquist, R. Woods, J. Wright, R. Peterson, J. Patek, T. Breitmeyer.





FIRST ROW: A. Pearson, J. Noblet, E. Baga, D. R. Smith, T. Olson, D. Loutit, C. Adams. SECOND ROW: R. Benoit, R. R. Seeber, E. J. Townsend, C. G. Stipe, G. J. Caspary, P. Koski, J. T. Nachazel, B. Osterman. THIRD ROW: P. Jacobson, A. DeRidder, R. Vernon, P. M. Carvalho, C. Englund, J. Barbier, Ed Albaugh, G. H. Williams, J. A. Donald, Ted Edwards, Hal Smith, Carl Stenson. FOURTH ROW: O. Anderson, R. D. Peterson, D. Stipe, G. McKindles, M. Koenders.







## KAPPA DELTA PSI

Since it was first organized by a group of World War I veterans on the Michigan Tech campus in 1920, Kappa Delta Psi has attained an enviable strength not only in numbers but also in achievements. One of the most outstanding examples of this fraternity's activities was the organization of the Michigan Tech Lode in 1921.

Long a source of campus leaders, the Kappa Deltas during the past year have been very active in all phases of campus life. They are intramural contenders in every sport and during the past year captured the envied intramural cup and are well on

their way to another. Of greater importance was their winning of the Winter Carnival Trophy for 1949.

The past year has been another dynamic one for the versatile Kappa Deltas. It saw the final realization of the life long Kappa Delt dream—a permanent home. Undertaking a task which was impossible to everyone but themselves, the Kappa Delt "nomads" purchased and completely renovated a chapter house. With this achievement behind them, in addition to its prominence in college activities Kappa Delta Psi merits a high place in the social life on the campus.











# ATHLETICS





## FOOTBALL SCORES

Opponents	They	We
University of Minnesota Duluth Branch . . .	13	19
Cornell College . . . . .	14	32
Detroit Institute of Technology . . . . .	6	33
Ferris Institute . . . . .	6	21
Northern Michigan College of Education . .	13	44
Northland College . . . . .	0	47
Stout Institute . . . . .	6	13







## THE 1948 MICHIGAN TECH HUSKIES

FIRST ROW: Pierce, Bianchini, Patek, Adams, Winkel, Donald, Johnson, Sipinen, McNay, Peterson, Zollinger.

SECOND ROW: Ricci, Stipe, Collins, R. Peterson, Pertille, Setterberg, Stenson, Edwards, Smith, Baga.

THIRD ROW: Bovard, Ziems, Osterman, Louit, Danko, Nettell, Anderson, Monticello, Halter, Bernard.

FOURTH ROW: Stenner, Markham, Free, Vernon, Gallagher, Storm, Meyn, Grossner, Huey, Carlson, Whitmarsh.

FIFTH ROW: Jacobson, Piggush, Pruyne, Cross, Lant, Thomas, Beath, Snyder, Miller, Freeman, Tait.

TOP ROW: Hawk, Ritzma, Motzer, Stasick, J. Peterson, Rowe, Karkosko, Karry, A. Peterson, Benoit.

## THE MICHIGAN TECH COACHING STAFF

K. N. Hawk, Trainer and Backfield Coach; A. J. Bovard, Head Coach; J. C. Bernard, Line Coach;  
W. R. Benoit, End Coach.





## THE 1948 FOOTBALL SEASON

When Head Coach Bovard issued his call for the first practice September 1, never was a Tech coach greeted with as much outstanding talent. This was shown by the spirited practice sessions held twice daily until first game-time.

The 1948 season proved to be the most successful ever undertaken by a Tech eleven. A big blow was felt before the season opened with the loss of Captain John Donald, but under the leadership of acting captain Jack Patek, the team fought their way to Tech's first undefeated season.

On September 18, Tech opened the season in Duluth, playing against the strong Duluth Branch of the University of Minnesota. Although Tech out-gained their opponents almost 3-1, fumbles were costly, and the winner was not known 'til the last 30 seconds when Stenson hit Monticello with a 38 yard pass to break a 13-13 tie and give Tech a 19-13 victory.

The following week found the Huskies at home with Cornell College of Iowa as their opponents. The game progressed on even terms until the beginning of the final quarter. With the score 14-12 in

Cornell's favor, Tech started to roll and sparked by the passing of Ted Edwards, Tech rolled up 3 more touchdowns before the final gun, giving them a 32-14 win. Tech suffered the loss of Al McNay in this game with a broken finger.

October 2 being an open date, October 9 was Tech's next chance to prove their strength. This time the victim was Detroit Tech to the tune of 33-6. Led by the running of Tussi Peterson and Whimpy Nettell, Tech rolled at will starting with Nettell's 80 yard return of the opening kick-off. The defensive play of the line was exceptionally fine.

The next engagement was with Ferris Institute played at Big Rapids, October 16. The Bulldogs from Ferris held for the first canto but the spirit and drive of Tech proved too much in the second period and both Nettell and Peterson drove over for touchdowns giving the Huskies a 14-0 halftime advantage. The second half saw Tech using reserves freely and the rest of the game was played on even terms with each team scoring once. Bob Storm scored Tech's touchdown on an interception and 35 yard run, making the final count 21-6.





The following week, the Tech Huskies played their annual Homecoming game against their traditional rivals, Northern Teachers of Marquette. Tech moved in front with two touchdowns in the first quarter and the winner was no longer in doubt. Adding 3 more scores in the second canto, the game turned into a rout. When the final gun had sounded, Tech had routed their opponents by a 44-13 score. Outstanding men for Tech were many and to pick them would be difficult.

Playing their final home game against Northland College in mud and rain, Tech added a 47-0 slaughter to their string of victories. With Bill Osterman scoring 3 touchdowns, the first half ended 21-0. The second half was similar to the first with the Huskies scoring 4 more touchdowns with Storm throwing passes of 56 and 58 yards for two of the 4 touchdowns. With the splendid play of the linemen, Northland never threatened Tech's goal.

Traveling to Menominee, Wisconsin for their last game of the season against Stout Institute, the Techmen came out on top of a rough, hard fought battle 13-6. Injuries and penalties were the feature of this game. The penalties against Tech erased three Huskie touchdowns. Bill Osterman suffered a fractured nose in the battle. Tech opened the scoring with Tussi Peterson going over in the first quarter. Stout tied the count in the second canto, 6-6. Tech came back in the third with a drive climaxed with Nettell going over from the one foot line. The linemen again played their brand of fine and alert defensive play. This was the final game for 8 Huskies. The graduating seniors include George Bianchini, Robert Pierce, Ed Snyder, Jack Patek, John Winkel, Leo Adams, Roy Sipinen, and Bob Johnson. With many of the top players back next year, the team should have another fine season. Co-captains for the 1949 season will be Tussi Peterson and Hal Smith.







## THE 1949 HOCKEY SEASON

Under the leadership and inspired play of Captain Marc Olson, the 1948-49 hockey squad of Michigan Tech finished the season with five wins and ten losses against the finest college sextets in the country.

Tech's new coach, Amo Bessone, issued his first call late in the fall but due to warm weather, practice on ice was impossible until shortly before their season opener. The Huskies opened this season against a more experienced squad from Queen's University. Although the boys made a good showing with so little practice, Tech lost their two game series with Queens, 6-3 and 7-4.

Tech entertained the University of North Dakota next and won their first game by a 6-3 count. The second game of the series was called off because of soft ice.

Taking to the road, the Tech Huskies dropped a pair to the Minnesota Gophers at Minneapolis by scores of 5-4 and 7-3.

Returning home for a six game stretch, Tech lost a tough one to the University of Michigan. The game was played on even terms throughout with the winning goal being made late in the final period. The following night was the big night for the Huskies when they came back to whip the Wolverines 6-2. This was the first and only defeat the 1948 National Champions suffered during the year.





During Winter Carnival week, four home games were played. The Michigan Tech Huskies downed the Golden Bears of the University of Minnesota the first night by the score of 6-4. The following night, the Golden Bears came back to top the Huskies by a 5-3 count. The feature of these two games was the playing of goalie Jan Watson of California who had 120 saves in the two games. Friday and Saturday nights saw Tech as hosts to the University of Minnesota. The Gophers took the first game 5-1 but

Tech came back the following night to close their home season with a 12-4 win.

Taking to the road again, Tech met the University of North Dakota in a two game series. The Huskies downed the Sioux sextet in the first tilt 5-2 but lost the following night 6-2 in a close contest. Closing the season at Ann Arbor, March 4th and 5th, the Huskies dropped a pair to the Wolverines.

Losing only one man through graduation, Tech should have a fine season during the 1949-50 year.







## HOCKEY SCORES

Opponents	They	We
Queens University .....	6	3
Queens University .....	7	4
University of North Dakota ..	3	6
University of North Dakota .....	2	5
University of North Dakota .....	6	5
University of California .....	4	6
University of California .....	5	3
University of Minnesota .....	5	4
University of Minnesota .....	7	3
University of Minnesota .....	5	1
University of Minnesota .....	4	12
University of Michigan .....	5	4
University of Michigan .....	2	6
University of Michigan .....	7	1
University of Michigan .....	8	3





#### TEAM

BACK ROW: Gitzen, Monahan, Sulentich, Nettell, Williams (Mgr.),  
R. Noblet, Robertson, Koski, P. Noblet.

FRONT ROW: Tormala, M. Olson, Ruhl, Wesala, Bessone (Coach), J.  
Noblet, T. Olson, Adams, Petaja.







## THE 1948-1949 BASKETBALL SEASON

Coach Alan Bovard was greeted by eight lettermen plus many other prospects when he issued his first practice call. Led by Captain Bob Kust, the Huskies won 7 while losing 9, playing the toughest competition in Tech history.

The big game of the season was with Wayne University, February 19th. This was the first time Tech's new Sherman Gymnasium was used. Although Tech came on the bottom of a 59-47 score, the Huskies can be proud of themselves for their showing. Wayne's shooting ability in this game was outstanding.

Bill Osterman led the Huskie cagers in the scoring columns with 162 points. His big nights were against Ferris Institute and St. Norbert's College when he scored 22 and 18 points respectively. Bill was followed by Larry Monticello with 137 points and Rudy Kelto with 92 points. Larry's big night was against Gogebic Junior College when he scored 16 points. Kelto's spirit and drive was well respected by his team-mates as well as the opponents.

With few men graduating, the 1949-1950 squad should have a very successful season.







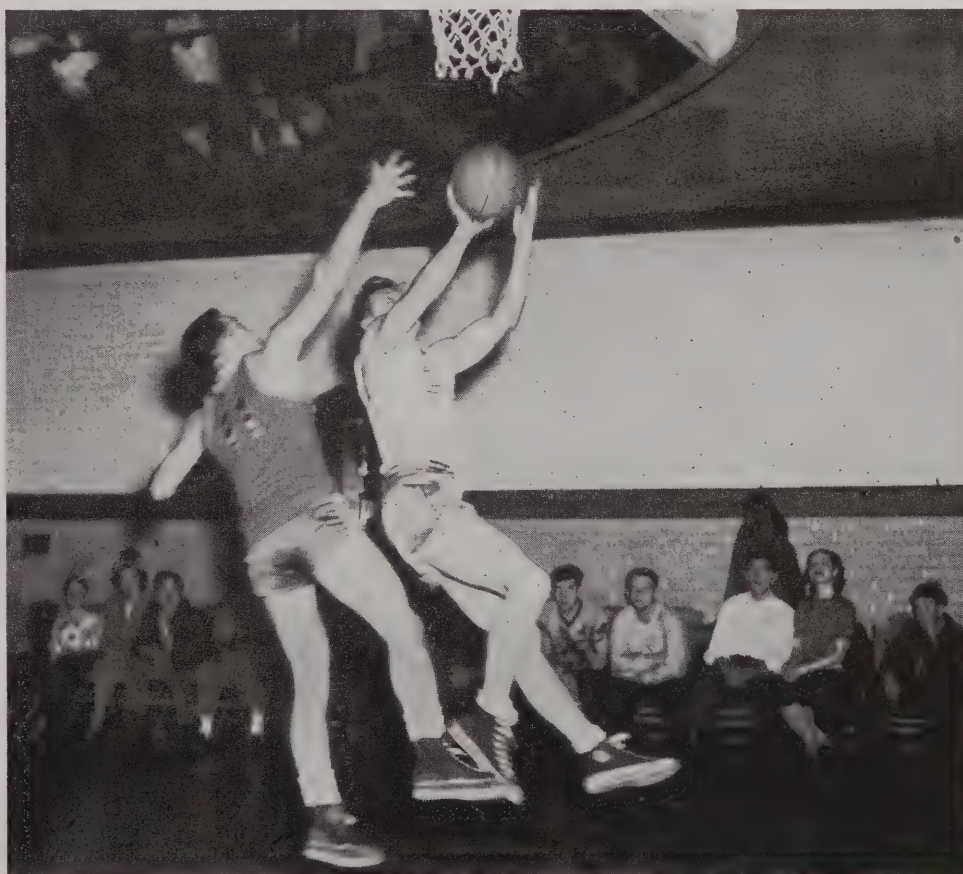


BACK ROW: Serafin, Kelto, Danko, Foley, Osterman, Driver, Monticello, Kust, Seaton.  
FRONT ROW: McKindles, Gustafson, Stepan, Popovich, Meagher, Peterson; A. J. Bovard, Coach.

## BASKETBALL SCORES

Opponent	They	We
Mission House College .....	41	39
Gogebic Junior College .....	60	51
University of Minnesota—Duluth Branch .....	60	46
Ferris Institute .....	46	50
Gogebic Junior College .....	46	60
Northern Michigan College of Education .....	45	50
Alma College .....	60	51
Ferris Institute .....	64	69
St. Norbert's College .....	73	46
Northland College .....	53	57
Wayne University .....	59	47
Northern Michigan College of Education .....	59	44
Northland College .....	52	53
St. Norbert's College .....	59	56
Milton College .....	52	57
Mission House College .....	52	50

















## SKIING

With Gene Knaebel leading the way, the Huskie Ski Team enjoyed their most successful season in Tech history. Two Central United States Ski Association sanctioned meets were held this year. The downhill and slalom intercollegiate championships were held at Ripley Hill, January 30. Tech placed third in this meet close behind University of Wisconsin and University of Minnesota. Individual honors went to Gene Knaebel of Tech who took seconds in both events and first in the combined. Joe Hangeland took a first place in the downhill.

The Central Ski Association combined downhill and slalom meet was held at Wausau, Wisconsin. Gene Knaebel became Ski Champ of the Central Ski Association when he took first in the combined events by placing fourth in the downhill and first in the slalom. Other Huskies placing were Sandquist 8th, Hangeland 12th, and Smith 13th.

A jumping meet was held March 6 at Ripley Hill. A new hill record of 130 feet was set. Hill improvements on the scaffold made longer jumps possible. The four event championships of the Central Ski Association was held at Caberfae Ski Area near Cadillac. Tech brought back two trophies from this meet, the two being the Gale Burton Trophy for the best intercollegiate four man team in three events, and the Jacob Munnemacker Memorial for the best four man team in four events. The Tech four man team included Joe Hangeland, Gene Knaebel, Mark Cross, and John Holst.

Members of the Huskie Ski Team include G. Knaebel, J. Hangeland, M. Cross, H. Buelteman, J. Holst, F. Sundquist, D. Harris, D. Berry, P. Goode, R. Wilcox, R. Bailey, E. Wenzel, W. Freeborn, G. Lambrecht, L. Munson, R. Walkama, R. Holm, R. Holgers, O. Rerigo, and D. Liljequist.









## GENE KNAEBEL

Gene Knaebel of Houghton again proved he was one of the nation's outstanding collegiate skiers. Gene became Ski Champ of the Central Ski Association, Downhill and Slalom Championships by placing first in the slalom and fourth in the downhill for first place in the combined. Over 100 skiers participated in this meet held at Wausau, Wisconsin.

Tech can be proud to have an outstanding skier like Gene on its ski team.





FIRST ROW: K. G. Fries, R. G. Erickson, R. C. Stanley, D. Rowe, C. Neubauer, K. Fou'ds. SECOND ROW: R. Walkamc, D. R. Smith, J. T. Ellis, G. C. Carver, M. Cross, C. Houle, E. S. Bartlett, P. Goode, H. O. Buelteman, D. Berry. THIRD ROW: L. Munson, B. Lovell, Fred Lonsdorf, C. Wellman, J. Morley, K. Mulholland, D. Vaughn, L. Reid, R. Bailey, C. Hawn, D. Williams, G. Barr. FOURTH ROW: F. Sunquist, J. Hangeland, A. Newton, D. Wenzel, E. Knaebel, R. L. Juetten, J. J. Messink, R. Schmitz, D. Wacker, J. Jamar.

## SKI CLUB

The Michigan Tech Ski Club, one of the more active groups on the campus, had a busy winter this season. All through the winter months, the Huskies were hard at work on Ripley Hill, keeping it in shape for the college skiers as well as planning and supervising the many ski meets which were held there. This aspect of the club's activities was handled, for the most part, by coach Fred Lonsdorf.

Many of the ski teams from colleges of the C.U.S.S.A. were entertained at Ripley this year. All meets were run off smoothly and all the competitors well satisfied. Besides the intercollegiate and jumping events, a competitive meet was held for the ski club members, with awards for the winners and runners-up.

The club, headed by president Bob Lovell, consisted of over seventy-five members. Meetings were held regularly every two weeks, where business was discussed, plans made, and committees chosen for the various activities of the club. Occasionally ski movies were shown.

Near the end of the season, the members went on an all day cross-country hike near Copper Harbor. A good time was enjoyed by all.

Several parties were held at the Huskie Hut this winter, usually on Friday night after night skiing. Movies were usually shown, refreshments served; "snow-bunnying" being the rule.

The activities were ended with the annual banquet held at the Scott Hotel in April.

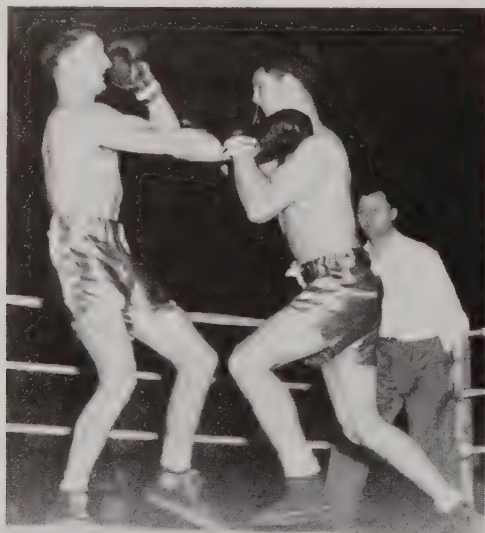


## 1948 TRACK TEAM

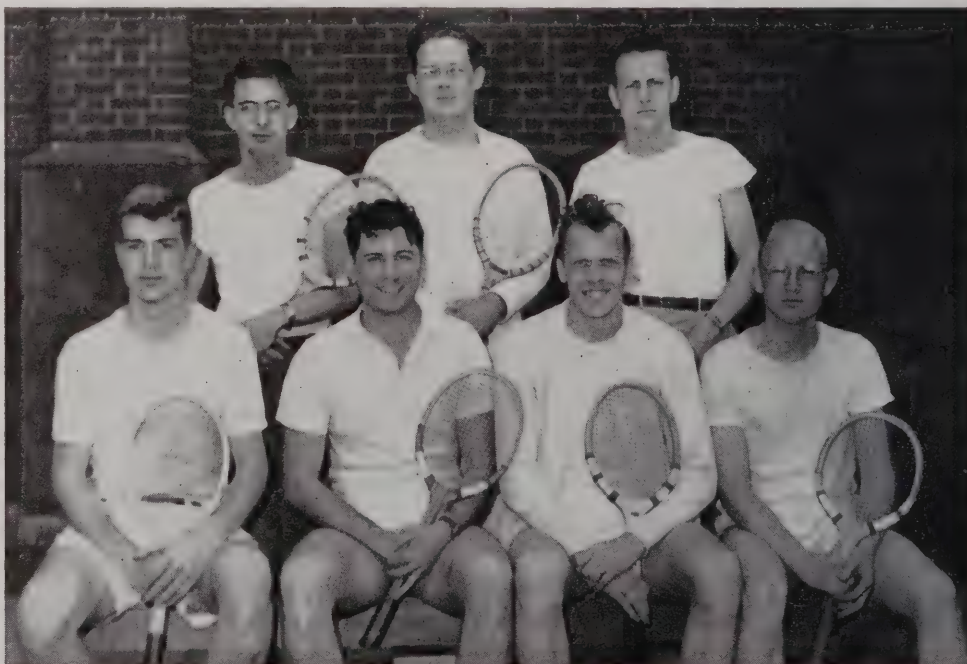


FIRST ROW: Boyer, Horris, Kuchta, Shaw, Schewe, Rutka, Gaffney, Penokie. SECOND ROW: Benoit, Johnson, Platske, Hastam, Seaton, Treankler, Dlouhy, Peterson, Levin, Van Loosenoord, Clink, Olson, Fisher. THIRD ROW: Droscha, Hall, Simi, Juetten, Becia

## BOXING



## 1948 TENNIS TEAM



BACK ROW: Bilger, Skeels, Nelson. FRONT ROW: Gallagher, Hikes, Christenson, Erickson.



## 1948 GOLF TEAM



Harris, Howell, Borgeson, Hickey, Bunting, Greenawalt, Piper, Schubert.

## 1949 RIFLE TEAM



FIRST ROW: R. Andersen, R. Johnson, M. Bourdow, D. Berry, C. Knapp, D. Corbin.  
SECOND ROW: J. Jamar, W. C. Hail, W. H. Ottman, L. D. Eckhoff, G. J. Voelz, J. R. Siewert





FIRST ROW: LaForais, Patek, Olson, Osterman, Donald, Setterberg. SECOND ROW: Smith, Munson, Briggs, Anderson, Loutit. THIRD ROW: Storm, Collins, Baga, Adams, McNay, Pertile, Peterson, Lovell. FOURTH ROW: Hall, Zollinger, Skeels, Winkel, Gallagher, Wenzel, Bianchini, Hikes.

## 

The Varsity Club is the organization of the varsity letter winners in the major sports at Michigan Tech. Its primary purposes are to promote school spirit and encourage interest and participation in athletics among the student body and the alumni.

The Club holds bi-weekly meetings. An annual banquet is sponsored each spring, at which time awards are presented to members who have taken part in one or more of the major sports. The annual homecoming dance is sponsored during the football season.

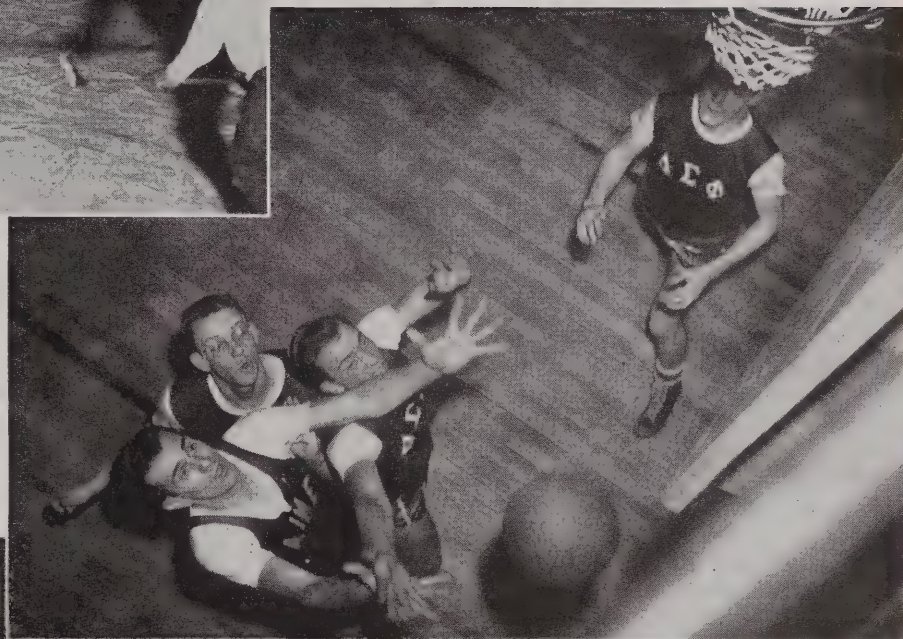


A. J. BOVARD

Professor and Head of the Department of Physical Education and Director of Athletics, is Alan J. Bovard, who fills the vacancy created by the death of Professor Donald P. Sherman.

Professor Bovard attended the University of Michigan and received the A.B. degree from that institution in 1930. He was a member of the University of Michigan Varsity football team during his college years and was placed on several All-Conference teams.



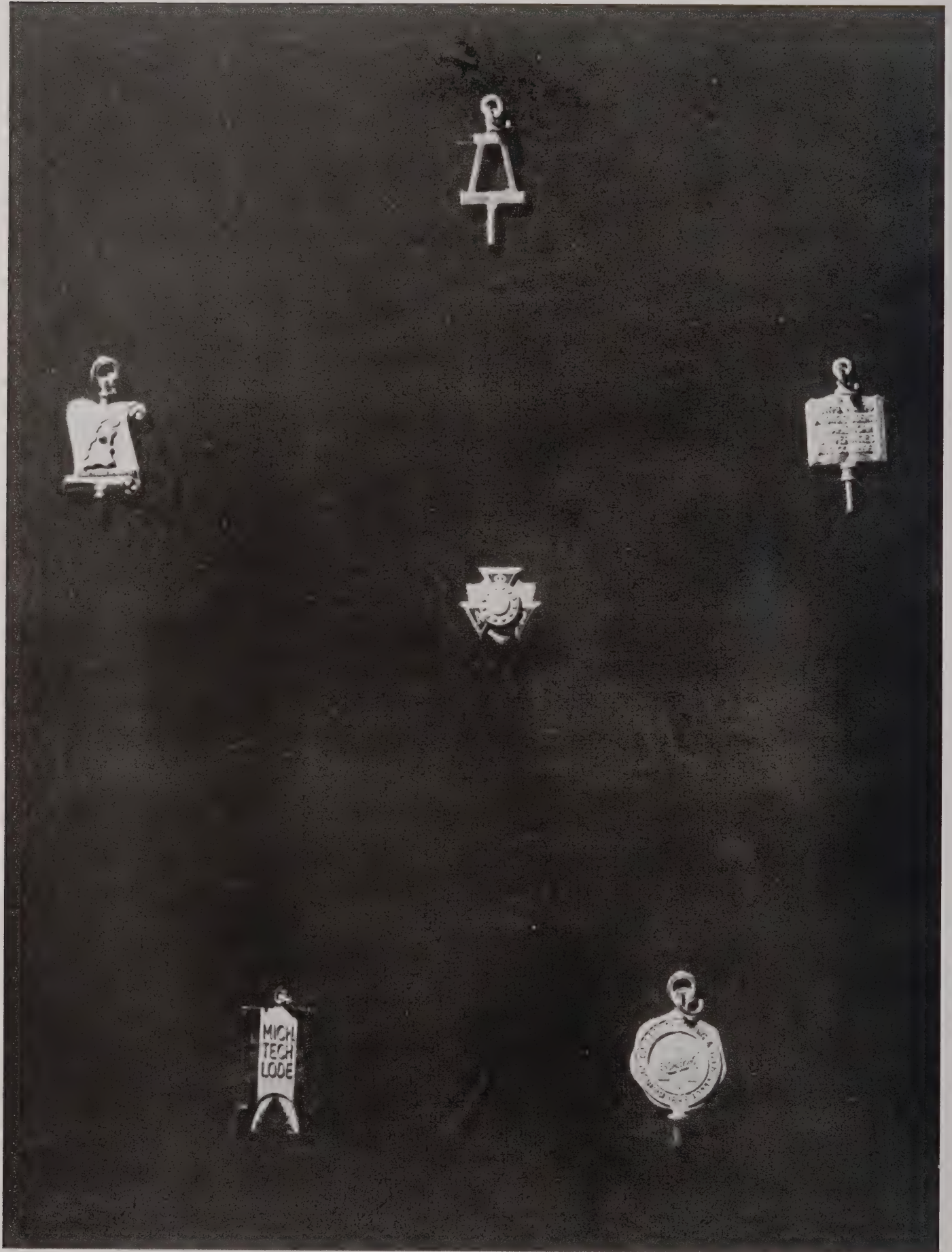


## INTRAMURAL SPORTS

Intramural sports at Michigan Tech are participated in by almost every fraternity, professional society, and class. The intramural program includes basketball, hockey, pingpong, pool, billiards, bowling, softball, and track. Points are given to those organizations that place in the various sports. The

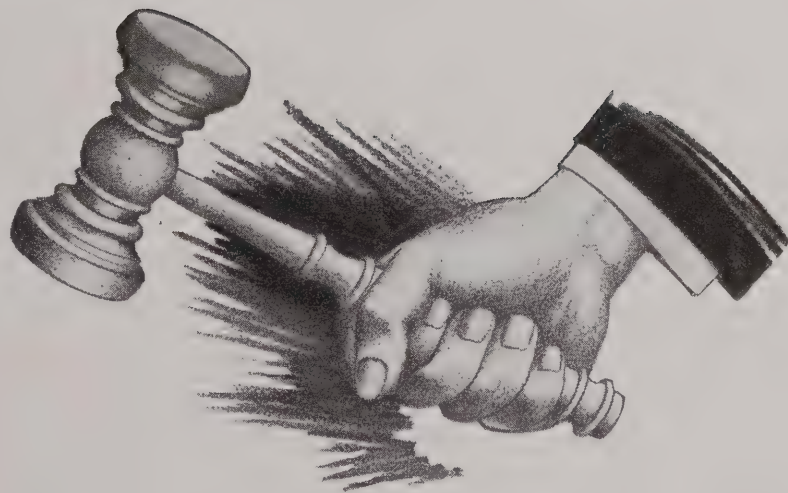
intramural trophy is given to the one having the greatest number of points at the end of the school year. The program not only serves to stimulate good sportsmanship but brings talent worthy of varsity consideration into the open.







# POT POURRI







FIRST ROW: J. Long, R. Hull, H. Smathers, S. Livingston, R. Smith, R. Nelson, R. Witte. SECOND ROW: F. Warren, R. Youngblood, P. Jansen, D. Rose, R. Margenau, E. Galbraith, M. Bunting.

## KEWEENAWAN

This year the staff of the **Keweenawan** attempted to bring to the students of Michigan Tech a yearbook which would be outstanding in composition, make-up, and design. To bring this about, work was started early in the fall term.

Editor Dick Livingston, with the aid of some of last year's staff and many new additions, inaugurated a campus-wide drive to create interest among all students in working on the yearbook. The results brought forth many men who helped to make this volume the best possible.

Many types of cover and weights of paper were examined before the final choice was made. The result was a heavier, better-bound, more attractive **Keweenawan** than ever before.

The many pages of pictures and writing which fill the book have been selected to bring the senior an actual record of his college days. The memories preserved therein will accompany him wherever he may be in the coming years.



## KEWEENAWAN STAFF

EDITOR-IN-CHIEF .....	RICHARD W. LIVINGSTON
BUSINESS MANAGER .....	MELVIN L. BUNTING
SPORTS EDITOR .....	RICHARD C. WITTE
ASSISTANT EDITOR .....	PETER N. JANSEN
PHOTOGRAPHY EDITOR .....	HARRY W. SMATHERS
ADVERTISING EDITOR .....	ROBERT L. HULL
FEATURE EDITOR .....	RICHARD R. SMITH
ASSISTANT BUSINESS MANAGER .....	THOMAS E. BESEMER
ASSISTANT PHOTOGRAPHY EDITOR .....	ROBERT YOUNGBLOOD
FACULTY ADVISOR .....	BURNEY B. BENNETT

## ACKNOWLEDGEMENTS

PHOTOGRAPHER .....	JACK KUKKONEN
ARTIST .....	WERNER SAVELA
PRINTING AND BINDING .....	FINNISH LUTHERAN BOOK CONCERN
ENGRAVING .....	R. D. HANDY, Inc.
COVERS .....	S. K. SMITH

### PHOTO CREDITS

AMERICAN CYANAMID COMPANY  
BETHLEHEM STEEL COMPANY  
DOW CHEMICAL COMPANY  
E. I. DuPONT DE NEMOURS & COMPANY, Inc.  
CATERPILLAR TRACTOR COMPANY  
AMERICAN BRIDGE COMPANY  
GENERAL MOTORS CORPORATION  
CHRYSLER CORPORATION  
WESTINGHOUSE ELECTRIC CORPORATION  
GENERAL ELECTRIC COMPANY  
KENNECOTT COPPER CORPORATION  
CLEVELAND CLIFFS IRON COMPANY  
ANACONDA COPPER MINING COMPANY  
ALLIS CHALMERS MANUFACTURING COMPANY  
UNITED STATES ARMY AIR FORCE  
PROFESSOR WILFRID C. POLKINGHORNE  
MR. PAUL R. HINZMANN  
JACK BODZIN  
HOWARD BOND  
ROBERT NEUBACHER  
GLENN BARR  
JOHN EVANS  
EDWARD BARTELLS  
ZYGFRIED R. WOLANSKI





FIRST ROW: G. T. McKindles, N. C. Pogacich, E. G. Dickinson, H. M. Bond, G. R. Watz, J. W. Haun, T. C. Gebhard, R. W. Burman, H. J. Barber, W. O. Tschantz, D. J. Smalter. SECOND ROW: P. C. Ellsworth, R. R. Smith, R. R. Matheson, A. G. Bernholdt, Jr., G. A. Bergstrom, E. P. Brady, W. R. Barton, F. W. Stone, W. J. Clark, H. S. Drewry, A. H. Brown, L. E. Hanson, D. E. Bishop, F. C. Wilson. THIRD ROW: E. C. Sutherland, B. Tretheway, V. J. Zanella, J. L. Voyles, R. Masnaghetti, J. D. Brule, W. R. Olson, J. Hangeland, A. W. Hall, S. W. Cota, T. Stowitts, R. E. Green, E. D. Finnegan, E. J. Glaser. FOURTH ROW: M. J. Marin, R. P. Matson, D. C. Ewing, J. A. Klungness, R. J. Aikema, R. R. Wallace, M. M. Olson, S. Stanaway, T. Atkin.

## TAU BETA PI

The Beta of Michigan Chapter of the Tau Beta Pi Association was inaugurated at Tech in 1904. Tau Beta Pi is the largest and most respected national honorary engineering fraternity, having chapters at some 83 colleges in the United States. The purpose of Tau Beta Pi is to mark in some fitting manner those who have conferred honor on their Alma Mater by distinguished scholarship and exemplary character as undergraduates in the field of engineering. Its intention is to foster a spirit of liberal culture in the engineering colleges and universities of America.

Members are selected from the upper fifth of the senior class and the upper eighth of the junior class

on a basis of integrity, breadth of interest, unselfish activity, and the ability to get along with their fellows.

This year Beta of Michigan improved the operation of its faculty rating poll along the lines of sincere constructive help to the staff of the college. The project is in keeping with the Association's object of promoting and encouraging professional advancement in engineering.

Through the active cooperation of more than eighty members the chapter was able to carry out a successful program of activities of interest to both its own membership and the student body as a whole.



## WHO'S WHO IN AMERICAN COLLEGES AND UNIVERSITIES



FIRST ROW: Fred Reed, Carl Stenson, Marc Olsen, Robert Wallace, Nick Pogacich, John Donald.  
SECOND ROW: Francis Stopar, Dwight Bishop, Ron Darling, F. Wilson, W. Nekervis. THIRD ROW:  
H. Richards, Sam Cota, E. Finnegan, Robert Lovell, Robert Pierce.

## WOODMAR COUNCIL



FIRST ROW: W. C. Hall, O. Hall, U. Shultz, R. J. Scanlan, J. E. Erickson.  
SECOND ROW: F. P. Drummond, J. R. Wiseman, W. J. Bero, C. M. Eberhardt, A. E. Plourde.





R. Wallace, W. Prasse, M. Olson, H. Smathers, N. Pogacich, D. McCullough, W. Nekervis, F. Reed, H. Richards, H. Zollinger.

## STUDENT COUNCIL

The Student Council is the official elected governing body for the students of Michigan Tech. This year Doug McCullough presided as president. The Council makes use of the money collected for student activities to promote social, athletic, and educational activities on the campus.

This year the Council sent delegates to the National Student Association conventions. These men

took part in the discussions of the problems of today's American college student. They presented to the group some of the aspects of the engineering colleges ideas and programs. They submitted a report to the student body here upon returning.

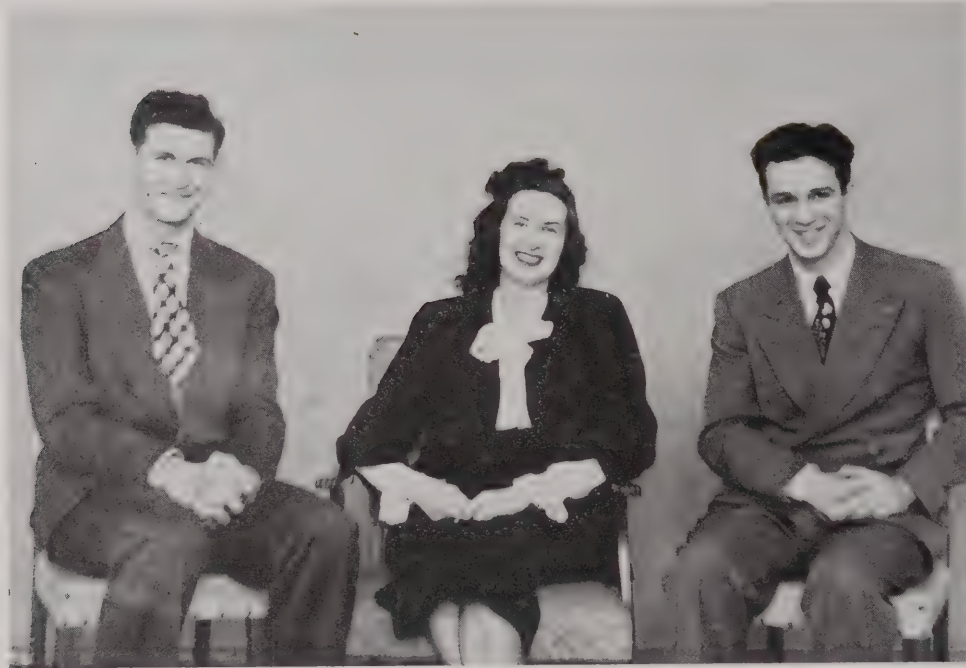
The accomplishments of this year's members speak well for their abilities. The students placed the government of their funds in competent hands.



## FROSH WEEK







H. Smathers, J. Hanna, A. Paradiso.

## DANCE COMMITTEE

Each year the student council appoints a dance committee to supervise and back social activities at Michigan Tech. Its funds are drawn from the student treasury to promote and encourage dances sponsored by itself or other organizations.

During the first half of the year, the notable achievement of the group was the Sadie Hawkins Day Dance. Under the chairmanship of Harry Smathers and Bruce Arbogast, "SHDD" was spread

throughout the campus. The dance was held on the traditional day that Daisy May pursues Li'l Abner. Prizes were awarded for the best costumes resembling those of the inhabitants of Dogpatch.

Throughout the year the members of the committee contribute a large portion of their spare time to arrange events for the student body. Their efforts have provided dancing for the hard-working engineer almost every weekend of the three long terms.



S. H. D. D.







FIRST ROW: G. Barr, D. Berry, R. Nelson, M. Towey, P. Fowle, T. Hruby, H. Hoffman, W. Cary. SECOND ROW: G. Durfee, R. Smith, R. Darling, D. Bolme, H. Gray, E. Weber, D. Rowe. THIRD ROW: S. Wiseman, E. Bartlett, W. Lux, D. Ritsema, E. Sutherland, W. Reinhardt, Cancich.

The first issue of the **Michigan Tech Lode** last fall marked the beginning of the first full year of weekly publication. Successfully tried last spring, weekly printing presented many organizational as well as technical problems not encountered in publishing bi-monthly editions.

Under the direction of Editor Tom Hruby a well organized program of staff enlargement was undertaken last fall with very marked results. Practically all of the journalistic talent on the campus was interviewed, and the addition of writers and ad-men contributed greatly to the ease and efficiency of putting out the expanded **Lode**.

Recognition of the value of this branch of extra-curricular work by the administration of the school manifested itself in the formation of a credited year's course in journalism. Weekly lectures on the fundamentals of journalism were given by members of the faculty. These, coupled with talks by newspaper

men, publishers, and printers, contributed greatly to the general betterment of the paper.

All efforts of the editors and staff were pointed to the task of publishing a bigger and better **Lode**. Under the management of Business Director Bob Nelson, a substantial national advertising contract was secured. This, coupled with a large local ad program guaranteed a large weekly income. With this able financing the **Lode** could and did print a weekly with more pictures, cartoons, and other features than any previous editions could afford. Significantly, the change from bi-monthly to weekly publication was accomplished without raising the subscription rates to students, a definite sign that the **Lode** is on a firm financial footing.

With a smooth-functioning staff, a good advertising income, and a training program for staff members, the **Michigan Tech Lode** is in a position to carry on its high standard in the years to come.

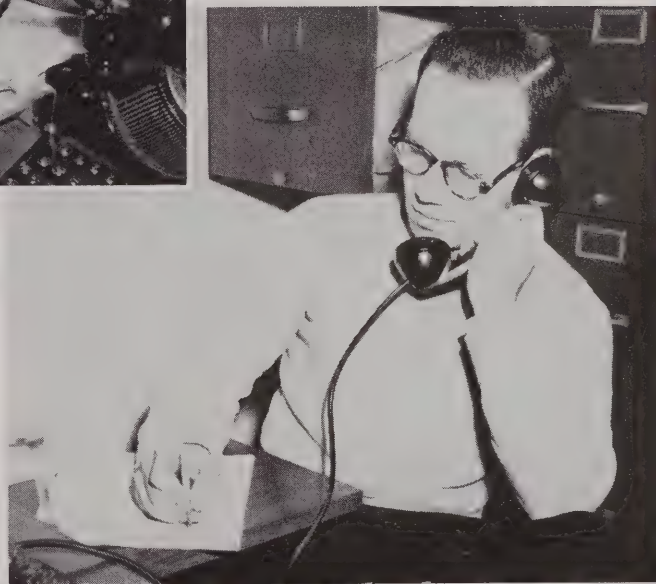


# The Michigan Tech Lode

EDITOR CHECKS  
THE PROFITS



NEWS EDITOR PHONING



LODE STAFF AT WORK?







FIRST ROW: B. Frantti, J. Mishica, J. Becia, R. Matheson, J. McNickle, B. Petaja, J. Guck, Wm. A. Hakala. SECOND ROW: P. Kaiser, T. R. Secor, I. L. Freeman, J. J. Bodi, A. Jarvela, Wm. W. Kline, T. Cahoon, P. M. Baroni, W. D. Smith. THIRD ROW: J. G. Shimandle, J. F. Viola, J. P. Mlinaz, P. H. Daavettila, P. F. Adams, P. T. Watts, R. P. Pierini, T. W. Trudgeon.

## INDEPENDENTS

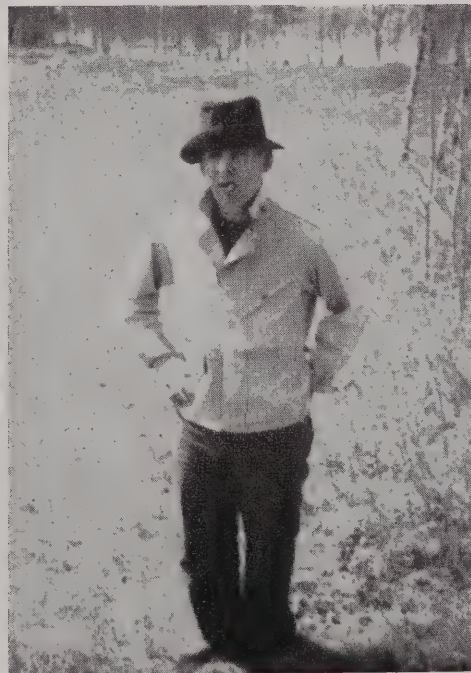
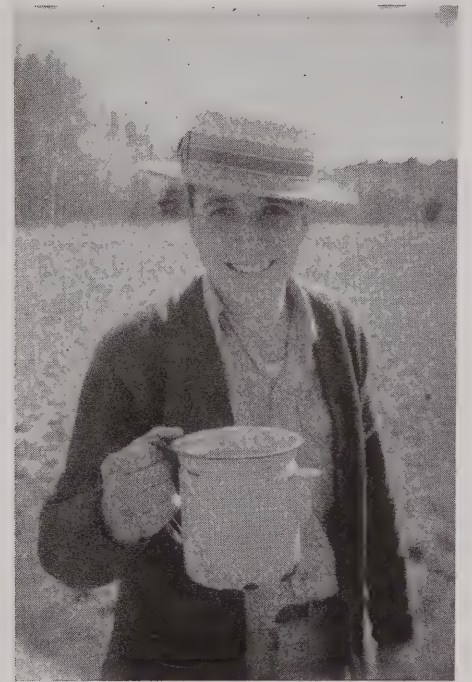
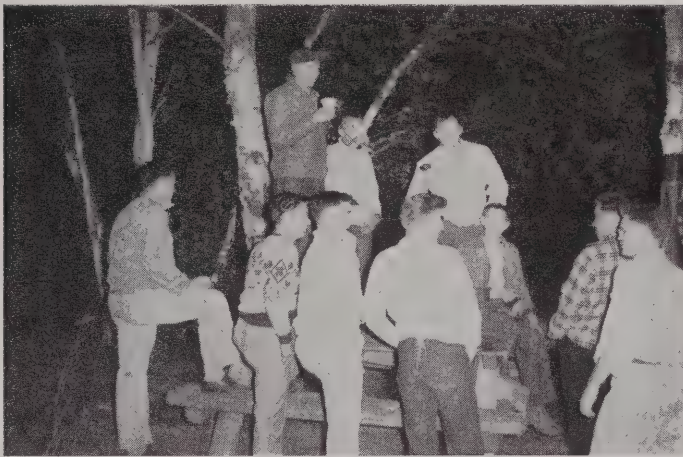
The Independents Organization forms the large mass of students at Michigan Tech. It is composed of men unaffiliated with the four fraternities on campus.

The organization is active in the social, competitive, and political affairs of the school. This year, as last, the independents carried the student elec-

tions. It sponsored its annual dance in addition to many other gatherings.

The picture above naturally cannot show all the members of this group. It serves to represent the many men, active in it this year, who will continue to make it one of the important organizations on the campus.







# 











FIRST ROW: G. Durfee, P. Fowle, R. Nelson, P. Towey, D. Berry, SECOND ROW: T. E. Hruby, H. Hoffman, J. Russell, D. Bolme.

## PRESS CLUB

The Press Club was established for the purpose of encouraging journalistic talent and promoting student publications on the campus. It is now completing its second year of life. Annually, it has published and sold its own specially designed calendar. The last design depicted in caricature the capers of an engineer at work.

Each term the club inaugurates new members into its ranks; only those who have served two or more terms on the Lode or Keweenaw staffs are eligible for membership.

Activities of the club are terminated with the "Bash." This consists of a slight party held during the spring term.

Born during an era of "wheels," the club's officers include a Supreme Wheel, Spare Wheel, Scribe, and Shaft. These positions were held this year by Bob Nelson, Jim Durfee, Pat Towey, and Dick Berry. Acting as faculty advisor for the big wheels and other wheels was Ed Spacie, who was voted in again as "Just Another Wheel."





FIRST ROW: R. Leow, D. DIBBLE, W. Cary, G. Bergstrom, B. G. Schubert, A. B. Swanson, H. D. Bond, F. P. Drummond, W. H. Miller. SECOND ROW: K. A. Spooner, Wm. F. Nekervis, E. R. Ruhlman, S. D. Burchenal, E. S. Bartlett, J. B. Tornberg.

## TRI BETA

Tri Beta, honorary band fraternity founded at Michigan Tech in 1932, is made up of men who excel in musical ability, character, and leadership. The members are drawn from the ranks of the Michigan Tech Band. Total membership is restricted to forty per cent of the active roll of the band, and requires at least one year of active participation in band activities.

The purpose of Tri Beta is to promote good music. During the fall term, the fraternity contacted all new students who played musical instruments. It put into operation the use of a short questionnaire to ascertain the lack of student interest in musical activities. The data received was used to simplify adminis-

trative methods and create curiosity in musical affairs on the campus.

The high point of the fall term is the annual program of Christmas music presented at the Kerredge Theater. This is in addition to other concerts sponsored by Tri Beta.

The fraternity has sponsored a number of informal weekend dances during the school year. In this way, dancing has been provided for the students when no other activities were scheduled at Dee Stadium. The proceeds from these events went to the purchase of new instruments for the band.

In the coming years Tri Beta will continue the promotion of good music which is so vital to an active campus.





FIRST ROW: K. E. Sorrell, K. Hansen, W. Sermon, J. T. Ellis, M. LaLuzerne. SECOND ROW: F. W. Swarens, R. L. Hyanes, G. P. Barr, C. Byrnes. THIRD ROW: R. Jilbert, J. P. Evans, F. W. Kuehnelt, A. J. Karvonen, E. G. Dickinson, A. K. Foulds. FOURTH ROW: R. Perkett, C. Orciuch, M. S. Siepak, A. Kazmierczak.

## CAMERA CLUB

The Michigan Tech Camera Club, haven for all breeds of photographers, full-time, frustrated, and fledgling, continues to occupy its accustomed position among the most active of the active groups. With its membership roll again nudging the top mark, the Club is enjoying a full and successful season.

Because of its temporary deactivation along with the rest of the campus orgs at the beginning of the term due to an outbreak of polio, the Club's fall term schedule was rather thoroughly upset; but with typical shutterbug determination, the program was promptly put in order, and the group is now more active than ever.

Although intended to be mainly a hobby club, the organization, while following its original theme, has enlarged upon it to a great extent. Among other things, the Club has to its credit at present the highly

successful presentation of its annual salon, held in conjunction with the Winter Carnival. Several of its members are now engaged as photographers for the Lode and Keweenaw. Through the efforts of an especially able program committee, several informal critiques have been held and members of the Club have been treated to an informative and entertaining series of lectures on photo techniques and processes. The Club's darkroom facilities have been recently expanded by the purchase of a 5x7 Solar enlarger and lens. Several other smaller pieces of equipment have also been added to insure the availability to members of a completely equipped up-to-date photographic darkroom.

If past experience and the leadership and membership cooperation exhibited at present can be taken as criteria, the Camera Club should continue to be numbered among the top campus organizations for a long time to come.





FIRST ROW: M. A. LaLuzerne, W. H. Ottman, G. C. Wilson, W. R. Johnson, R. J. Woelk. SECOND ROW: H. Lombard, R. B. Bergdahl, E. R. Gaber, D. B. Mowatt, W. E. Bergdahl, J. H. Baker, D. G. Springings, F. A. Meyn. THIRD ROW: R. E. Schmitz, C. A. Rautiola, J. P. Evans, H. C. Brushe, K. D. Seaton, J. S. Scott, F. H. Liesong, W. J. Dougherty, P. N. Jansen, D. R. Kessler.

## ALPHA PHI OMEGA

Epsilon Lambda chapter of Alpha Phi Omega was organized at Michigan Tech in the fall of 1947. It became one of the more than 170 chapters on the camp of the United States which comprise the fraternity.

The members of Alpha Phi Omega are former Boy Scouts who are carrying over into young manhood that which Alpha Phi Omega stands for, **Service to our Fellow Men.** Toward this end, Epsilon Lambda has promoted many functions of service for the school and community. The outstanding project of this young organization was the sponsorship last spring of a "Copper Country Charity Ball," the first

of its kind held in this part of the country. The success of this venture prompted the idea of making it an annual event.

As the fraternity grows older and gains in experience, it will enhance its ability to be of service. Plans are being formulated for a bigger and better "Charity Ball," a few outings with the usual refreshments, and any other functions that may arise.

During this school year Fred Liesong served as president, Dave Mowatt as treasurer, Clifton Rautiola as secretary, Don Holland as pledge chairman, George Evans as alumni secretary, and Earl Gaber as historian.





FIRST ROW: W. M. Smith, E. N. Hess, R. J. Beula, R. Birmingham, F. A. Reed. SECOND ROW: O. W. Borgeson, C. E. Peterson, F. M. Charles, L. A. Rhoads, R. E. Taylor. THIRD ROW: J. C. Price, C. J. Roinson, B. Tretheway, J. E. Vrugink, N. A. Frank, P. F. Johnson.

## SQUARE AND COMPASS CLUB

Freemasons are found throughout the world where honesty, free thinking, tolerance, relief, temperance, justice, and a belief in the fatherhood of God and the brotherhood of man still exist. Because these are the principles upon which our government is based, it is not surprising that the number of Masons in the United States is a majority of the world membership.

In 1946 a small group of students organized this club to gather together Masons on the campus who would ordinarily be "visiting" the lodge in Houghton. This enabled the brothers to improve themselves in Masonry and to assist in cultivating more friendships. A Fellowcraft Team was created in the spring of 1947. Since then, it has traveled to the lodges of the Copper Country to portray the Third Degree.



## RADIO CLUB



FIRST ROW: R. G. Burgess, R. C. Browning (W8ZYI), K. L. Pekarek (W8ATX), C. Orciuch (W1MTD), R. R. Masnaghette (W8BTZ). SECOND ROW: C. Fu, G. P. Barr (W8DBV), F. A. Rausch (W9DCH), J. T. Ellis (W8DAS).

## DORM CLUB



FIRST ROW: J. J. Broecker, Jim Messink, H. W. Gray, R. G. Erickson, R. E. Margenau, M. LaLuzerne. SECOND ROW: R. L. Pierce, C. E. Fritts, R. Schnitzel, G. H. Miller, J. G. Cencich. THIRD ROW: J. Lang, Wm. R. Johnson, A. E. Nilsen, W. Raketich, F. M. Thomas. FOURTH ROW: J. H. Baker, C. P. Beath, B. Harvey.



## COEDS



FIRST ROW: L Tormen, J. Weidelman, D. M. Tobin, G. Peterson, A. Rice. SECOND ROW: J. A. Fenton, J. A. Round, J. Stone, G. A. Johnson, C. Hess. THIRD ROW: V. Stuckey, P. Towey, H. Drummond, M. Aasve.

## NEWMAN CLUB





## WESLEY FOUNDATION



## GAMMA DELTA

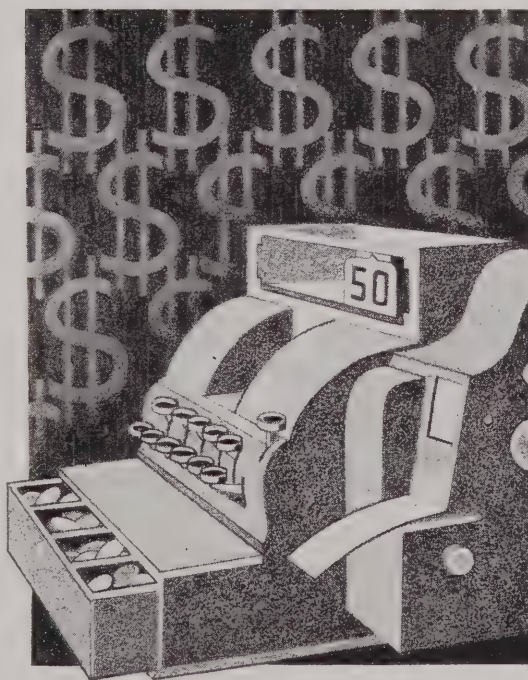








# ADVERTISING AND INDEX







*An  
Excellent  
Engineering  
College  
in an  
Ideal  
Location*

## THE MICHIGAN COLLEGE OF MINING AND TECHNOLOGY

FOUNDED IN 1885



*DEGREES OFFERED IN*  
SCIENCE . . . ENGINEERING . . . FORESTRY



*FOR INFORMATION, ADDRESS*  
THE REGISTRAR  
MICHIGAN COLLEGE OF MINING AND TECHNOLOGY  
HOUGHTON, MICHIGAN



# HOUGHTON NATIONAL BANK

## HOUGHTON, MICHIGAN

*The Copper Country's Oldest Banking Institution*

1865

1949



● A modern bank—offering complete financial services

We cordially invite you to use our facilities

●

*Member F.D.I.C.*





**COPPER RANGE  
LAUNDRY AND DRY CLEANING**

Houghton, Michigan



**COMMERCIAL SYSTEMS INCORPORATED**

Houghton, Michigan



**68 YEARS OF PROGRESS**

1883

1949

•  
Visit

Our Newly Remodeled Store

•  
**GARTNER'S  
STERN & FIELD**

Hancock

•  
**ED HAAS & CO.**

HOUGHTON — CALUMET

•  
Your College and Our Store  
Originated Together  
and Progressed

We are proud of our part in helping produce this issue  
of the

**KEWEENAWAN**

**R. D. HANDY, INC.**

Manufacturers of Quality Printing Plates  
Since 1900

•  
Art for Advertisers — Photo Retouching —  
Offset Negatives & Plates

30 East Superior Street    **DULUTH, MINN.**    Melrose 1600



# HOW YOU BENEFIT

## From Yuba's 40 Years of Specialization



Capital No. 4, operating near Folsom, Calif., equipped with Yuba Mud Pumping System to remove mud and fine tailings which slide or settle into the pond and which otherwise would prevent dredging.

### Don't guess and gamble on your dredge problems.

Consult Yuba and get the benefit of 40 years continuous experience in bucket ladder dredge design and operation...all sizes from the smallest buckets to the largest...for digging all dredgeable materials for gold, tin, platinum or other mineral products—depths from 10 feet or less to 150 feet or more.

### Dredge Building a Field for Specialists

Each and every property presents its own peculiar requirements...that's why Yuba's world-wide experience and skill, developed under all kinds of dredging conditions, offer you so much. It's this specializing on dredging problems that led to the development by Yuba engineers of the Yuba Mud Pumping System; portable pontoon-type steel hulls, and many other mechanical improvements, including the application to deep dredging of the Perry Patented Bucket Idler.

### Early Operation

Combine your knowledge of your property with Yuba's specialized engineering ability, and you'll get a dredge that will consistently deliver maximum yardage at low

cost. You'll get early delivery, too, because Yuba's shop and crew are geared to fast production and dredge erection. Find out for yourself what we can do for you. Wire or write NOW. No obligation.

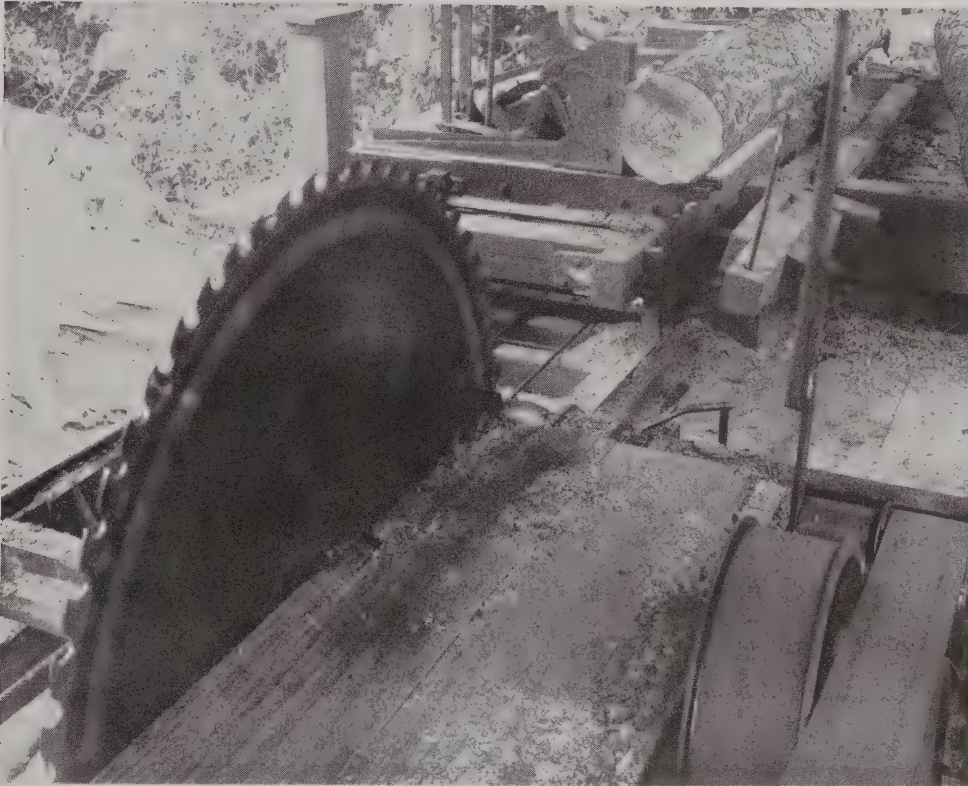
**Yuba will build special equipment to your order. Complete steel fabricating and machine shop facilities available. Send us your blue prints or specifications for prices.**

## YUBA MANUFACTURING CO.

351 California Street, SAN FRANCISCO, CALIFORNIA



## **MORE BOARD FEET PER MAN with Simonds Saws**



Whether it's cutting logs, lumber or metal—  
Simonds makes a saw to do the job better.

**Solid Tooth Saws—Inserted Tooth Saws—Band Saws**

### **I. E. SWIFT COMPANY**

Houghton, Michigan

**MINING, LUMBERING AND INDUSTRIAL SUPPLIES  
WHOLESALE AND RETAIL HARDWARE**

*Distributors for:*

**SIMONDS SAW & STEEL COMPANY**

AMES BALDWIN WYOMING CO.  
AMERICAN SAWMILL MACHINERY CO.  
FAYETTE R. PLUMB, INC.  
JOHN A. ROEBLING'S SONS CO.  
GOODYEAR TIRE AND RUBBER CO.

BENJAMIN MOORE CO.  
CRANE CO.  
LUNKENHEIMER CO.  
NATIONAL TUBE CO.  
S. G. TAYLOR CHAIN CO.



---

**GAS** is best

**98 YEARS**  
of  
*Public Service*



MICHIGAN CONSOLIDATED GAS COMPANY

---



**WE CONGRATULATE**

the  
**CLASS**  
of  
**1949**



**HAMAR-QUANDT CO.**

*Builders Supplies*

**Laurium . HOUGHTON . Ontonagon**



**Your 1949 KEWEENAWAN Photographer**

Everything in Photography

Photo Finishing

Enlarging

Portraiture

•

**JACK KUKKONEN**

418 Quincy Street

Hancock



**BEST WISHES AND CONTINUED SUCCESS**

**CLASS OF '49**



**Blue Beacon and  
Red Arrow Coals**

**Combustioneer  
Automatic Coal  
Stokers**

**MICHAEL MESSNER**

**920 Lake Front**

**HOUGHTON, MICHIGAN**

**"Where Quality Tells and Service Sells"**



# The Key



to  
Hospitality

**W**HEN good fellows get together, Bosch Beer always adds to the congenial companionship. Bosch has been brewing fine beer for 75 years — so always insist on Bosch — the beer that's just "naturally good."

# Bosch

## BEER

BOSCH BREWING COMPANY, HOUGHTON, MICH.

OUR DIAMOND JUBILEE YEAR



**CONGRATULATIONS AND BEST WISHES  
FOR CONTINUED SUCCESS THROUGH THE YEARS**

**to the**

**M. C. M. & T. GRADUATING CLASS OF 1949**

**CALUMET AND HECLA CONSOLIDATED  
COPPER COMPANY**

**NORTHERN  
BOWLING PIN COMPANY**

Hancock, Michigan

•

Manufacturers

of

**LAMINATED BOWLING PINS**

**J. C. PENNEY COMPANY**

•

For Your Shopping

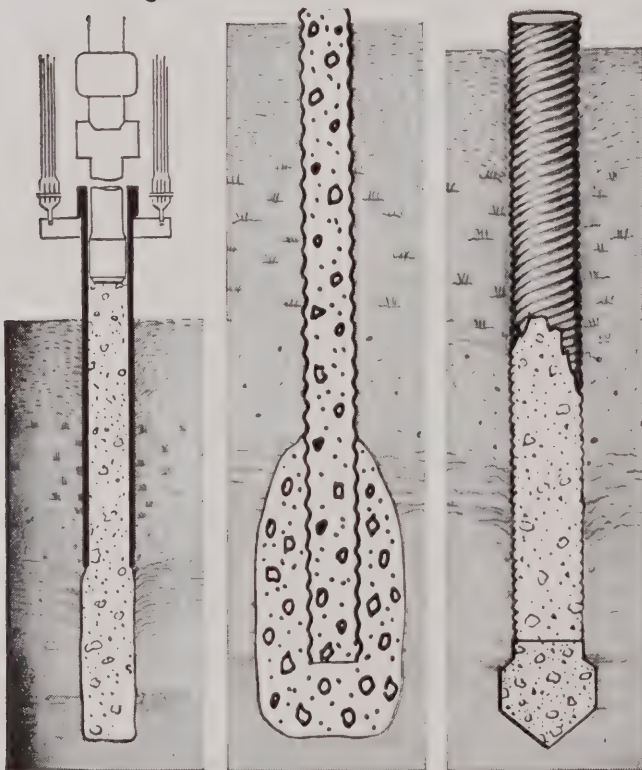
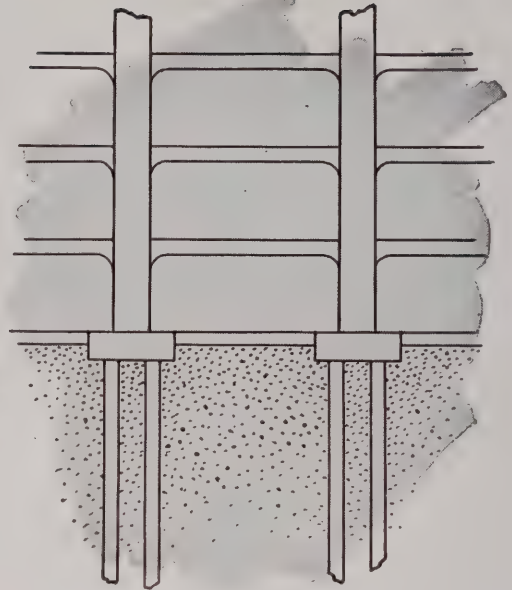
Pleasure—

**PENNEY'S OF HOUGHTON**



**FOR GREATER STRENGTH AND SAFETY**  
**ADVANCED ENGINEERING UTILIZES**  
**CYLINDRICAL COLUMNS**

***Western uses  
cylindrical piles***



Left: Compressed Concrete Pile—A cylindrical pile of great carrying strength.  
 Center: WESTERN type Pedestal Pile — Enlarged base affords unusual load capacity.  
 Right: Button Bottom Pile—Greater diameter base increases bearing value.

**L**IKE A COLUMN, a foundation pile transfers its load to the base on which it rests. The larger the base, the greater the carrying capacity. Thus, a truncated cone will stand up on its wide base on soil of a given bearing value but will settle if inverted.

Compressed Concrete Piles have bearing capacities up to 80 tons. In cases where the bearing value of the soil is such that the diameter of the shaft does not provide sufficient carrying capacity, WESTERN enlarges the base by forming a pedestal. Another WESTERN pile that utilizes the enlarged base is the Button Bottom Pile. WESTERN provides adequate END bearing to carry the load; what is gained by skin friction is an additional safety factor.

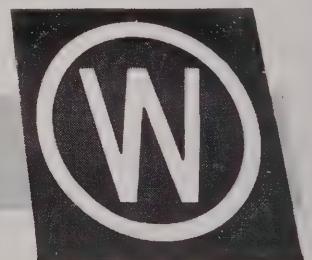
WESTERN has handled every type of site, soil, and load problem since 1924. No job is too big; no job is too tough for WESTERN. For fast action call on our **FREE CONSULTATION SERVICE**. A WESTERN engineer will give you authoritative advice and assistance. Write for Catalog A.

**FOUNDATIONS FOR**  
 INDUSTRIAL PLANTS, WAREHOUSES, POWER PLANTS, BRIDGES, PIERS AND DOCKS,  
 AIRPORTS, STEEL PLANTS, SCHOOLS, COMMERCIAL BUILDINGS, ETC.

**WESTERN FOUNDATION CORPORATION**

308 W. Washington St., Chicago 6, Ill.

• 2 Park Avenue, New York 16, N. Y.





## **Like progressive engineers**

a progressive printing organization strives for improvement in all it does. The fact that relations between Techmen and ourselves grow increasingly pleasant each year indicates a kindred appreciation of work well done.

## **THE BOOK CONCERN**

HANCOCK, MICHIGAN

*Printers of the 1949 Keweenaw*



**CONGRATULATIONS AND BEST WISHES**  
**to the**  
**CLASS OF 1949**  
**from the**  
**BUSINESS MEN OF HOUGHTON AND HANCOCK**

•

**STECK'S FLOWER SHOP**  
Calumet—Houghton

**DWYER'S SHOE STORE**  
Richard K. Carne, Prop.

•

**O'DONNELL-SEAMENS**  
Women's Smart Apparel

•

**THE GOLDEN PHEASANT  
NITE CLUB**  
Hancock

•

**WESTSIDE PHARMACY**

•

**WEBER'S TIRE SHOP**  
Sporting Goods

•

**HAUG'S JEWELRY STORE**  
C. J. Haug, Prop.

•

**FIRESTONE SUPPLY STORE**  
Houghton



# **HERMAN GUNDLACH, INC.**

**General Contractor and Building Construction**

Organized 1898

Huron Building  
Houghton, Michigan

Phone 485

**Compliments of**

## **THE DORR COMPANY, ENGINEERS**

Specialists in the Separation  
of Finely Divided Solids in Liquids

2639 University Avenue,  
ST PAUL 4, MINNESOTA

Other Offices: New York, Atlanta, Toronto,  
Chicago, Denver, Los Angeles.



## Senior Index

- ABOTT, JOHN D., Shaker Heights, Ohio—*Geological Engineering*; AIME, Rock Knockers. Page 63.
- ABRAMSON, ESTHER A., Laurium, Michigan—*General Science*; Mathematics. Page 110.
- ADAMS, LEO J., Saginaw, Michigan—*Metallurgical Engineering*; ASM, Alpha Sigma Mu, Football, Kappa Delta Psi, ROTC—Advanced, Varsity Club. Page 19.
- ADLER, CALVIN C., Detroit, Michigan—*Metallurgical Engineering*; ASM, Camera Club, Lode. Page 17.
- AHLSTROM, CLARENCE W., Muskegon, Michigan—*Engineering Physics*; AIME, Delta Sigma Phi. Page 45.
- AHO, CHARLES P., Hancock, Michigan—*Forestry*. Page 89.
- AHO, EDWIN W., Hubbell, Michigan—*Forestry*; Forestry Club. Page 87.
- ALBERTSON, CHARLES, Dowagiac, Michigan—*Civil Engineering*; ASCE, Chi Epsilon. Page 77.
- ALKEMA, RICHARD J., Muskegon, Michigan—*Mechanical Engineering*; Blue Key, Theta Tau, Tau Beta Pi. Page 33.
- ALLEN, WILLIS C., Bessemer, Michigan—*Electrical Engineering*. Page 101.
- ANDERSON, EUGENE R., Iron River, Michigan—*Mechanical Engineering*; ASME. Page 33.
- ANDERSON, KENNETH R., Iron Mountain, Michigan—*Electrical Engineering*; AIEE, Basketball, Varsity Club. Page 98.
- ARDUCANT, LEO R., Ironwood, Michigan—*Mechanical Engineering*; ASME. Page 33.
- ARNTZEN, KENNETH L., Escanaba, Michigan—*Mechanical Engineering*; ASME, Delta Sigma Phi. Page 38.
- ATKIN, THOMAS A., Houghton, Michigan—*Mechanical Engineering*; ASME, Tau Beta Pi. Page 35.
- AUDAY, WILLIAM S., Huntington Park, California—*Electrical Engineering*. Page 102.
- AUGUSTINE, JOSEPH J., Calumet, Michigan—*Electrical Engineering*; AIEE. Page 97.
- AXELSON, OLIVER C., Iron River, Michigan—*Mining Engineering*; AIME. Page 67.
- BACKMAN, ELLSWORTH J., Dollar Bay, Michigan—*Mechanical Engineering*; ASME. Page 38.
- BALCONI, PAUL M., Houghton, Michigan—*Mechanical Engineering*; ASME. Page 35.
- BALMER, WILLIAM E., Port Huron, Michigan—*Forestry*; Forestry Club. Page 88.
- BARBER, HAROLD J., Pontiac, Michigan—*Mechanical Engineering*; ASME, Football, Tau Beta Pi, Sigma Rho. Page 31.
- BARBER, RAYMOND R., Duluth, Minnesota—*Chemical Engineering*; AICbE. Page 53.
- BARDEN, LYLE W., Gaines, Michigan—*Forestry*; Forestry Club. Page 89.
- BARR, GLENN P., Evanston, Illinois—*Electrical Engineering*; AIEE, Camera Club, Lode, Radio Club, Ski Club. Page 100.
- BARRONS, HOWARD J., Laurium, Michigan—*Metallurgical Engineering*; ASM. Page 17.
- BARTON, WILLARD R., Albany, New York—*Civil Engineering*; ASCE, Chi Epsilon, Tau Beta Pi. Page 75.
- BARTOSZEK, ANTHONY, Perronville, Michigan—*Forestry*; Forestry Club. Page 89.
- BEAUDOIN, KENNETH H., Chicago, Illinois—*Mechanical Engineering*; ASME. Page 35.
- BECKER, THEODORE W., Columbus, Ohio—*Mining and Geological Engineering*; AIME, Rock Knockers. Page 68.
- BELLACK, JACK H., Newberry, Michigan—*Electrical Engineering*; AIEE, Boxing. Page 100.
- BENSON, CONWAY N., Iron Mountain, Michigan—*Mechanical Engineering*. Page 38.
- BENZIE, WALLACE J., Norway, Michigan—*Civil Engineering*; ASCE, ROTC—Advanced, Distinguished Military Student, Chi Epsilon. Page 75.
- BERG, RUDOLPH J., Lake Bluff, Illinois—*Civil Engineering*; ASCE, Vice-President: Senior Class, Delta Sigma Phi, ROTC—Advanced, 1st Lieutenant, Student Council, Tau Nu Tau. Page 75.
- BERGSTROM, FLOYD A., Marquette, Michigan—*Chemical Engineering*; AICbE, Phi Lambda Upsilon, Tau Beta Pi. Page 53.
- BERGSTROM, GEORGE E., Daggett, Michigan—*Electrical Engineering*; AIEE, Newman Club, Tri Beta. Page 103.
- BERKHAHN, ROBERT W., Clintonville, Wisconsin—*Mineral Dressing*; AIME, Alpha Sigma Mu. Page 27.
- BERNHOLDT, ARTHUR G., Jr., Richmond Hill, L. I., New York—*Mining Engineering and Mineral Dressing*; AIME, Alpha Sigma Mu, Blue Key, Sigma Rho, Tau Beta Pi. Page 69.
- BERO, WILLIAM J., Jr., Menominee, Michigan—*Mechanical Engineering*; ASME, Woodmar Council. Page 32.
- BERTIE, RAYMOND J., Wakefield, Michigan—*Mining and Mineral Dressing*; AIME, Alpha Sigma Mu, Sigma Rho. Page 69.
- BESAW, WILLIAM J., Iron River, Michigan—*Civil Engineering*; ASCE, ROTC—Advanced, Rifle Team, Air ROTC, Sigma Alpha. Page 78.
- BEUMER, JOHN, Jr., Royal Oak, Michigan—*Electrical Engineering*; AIEE. Page 101.
- BIETZ, RICHARD J., Sturgis, Michigan—*Metallurgical Engineering*. Page 18.
- BIRMINGHAM, ROY, Jr., Menominee, Michigan—*Mechanical Engineering*; ASME, Square & Compass Club. Page 32.
- BISHOP, DWIGHT E., Racine, Wisconsin—*Engineering Physics*; Physical Society, Tau Beta Pi, "Who's Who in Colleges." Page 45.
- BJORNE, CALVIN C., Ishpeming, Michigan—*Mineral Dressing*; AIME. Page 27.
- BLAKENEY, HORACE W., Duluth, Minnesota—*Electrical Engineering*; AIEE. Page 97.
- BLOM, JACK, Mt. Clemens, Michigan—*Mechanical Engineering*; ASME, Delta Sigma Phi. Page 33.
- BODZIN, JACK J., Detroit, Michigan—*Metallurgical Engineering*; ASM, Alpha Sigma Mu, Camera Club, Keweenaw, Lode, Press Club. Page 19.
- BOERMA, JACK B., Petoskey, Michigan—*Electrical Engineering*. Page 98.
- BOGDAN, RAY R., Chicago, Illinois—*Electrical Engineering*; AIEE, Newman Club. Page 102.
- BOISVERT, BERNARD W., Detroit, Michigan—*Metallurgical Engineering*; ASM, Alpha Phi Omega. Page 19.
- BOND, HERBERT M., Wyandotte, Michigan—*Chemical Engineering*; AICbE, Phi Lambda Upsilon, Tau Beta Pi. Page 54.
- BOORMAN, ALFRED C., Jr., Muskegon, Michigan—*Mechanical Engineering*; Sigma Rho. Page 36.
- BORGESON, GEORGE A., Jr., Hibbing, Minnesota—*Metallurgical Engineering*; ASM, Sigma Rho. Page 18.
- BORGESON, OLIVER W., Hibbing, Minnesota—*Mining Engineering*; AIME, Varsity Club, Square & Compass Club. Page 68.
- BOTSFORD, ROBERT B., Duluth, Minnesota—*Mining Engineering*; Sigma Rho. Page 69.
- BOURDOW, MILES W., Saginaw, Michigan—*Forestry*; Forestry Club, Varsity Rifle Club. Page 89.
- BREITMEYER, TOM, Mt. Clemens, Michigan—*Electrical Engineering*; AIEE, Football, Golf, Kappa Delta Psi, Varsity Club. Page 98.
- BROECKER, JOSEPH J., Racine, Wisconsin—*Metallurgical Engineering*; ASM, Alpha Sigma Mu, Newman Club, Douglass Houghton Hall Club. Page 18.
- BROWN, ALFRED H., Jr., Iron Mountain, Michigan—*Civil Engineering*; ASCE, Camera Club, Ski Club, Chi Epsilon, Tau Beta Pi. Page 76.
- BROWN, WALLACE W., Detroit, Michigan—*Mining Engineering*; AIME. Page 69.



- BROWNING, RICHARD C., Iron Mountain, Michigan—*Electrical Engineering*; AIEE, Radio Club. Page 101.
- BRULE, JOHN D., Hancock, Michigan—*Electrical Engineering*; AIEE, Eta Kappa Nu, Tau Beta Pi. Page 97.
- BUCKLUND, KENNETH W., Escanaba, Michigan—*Civil Engineering*; ASCE, Blue Key, Kappa Delta Psi. Page 75.
- BULLEN, WILLIAM, D., Mason, Michigan—*Civil Engineering*; ASCE, Chi Epsilon. Page 75.
- BUNTING, MELVIN L., Detroit, Michigan—*Chemical Engineering*; AICHE, Golf, Keweenaw, Theta Tau, Dance Committee. Page 54.
- BURMAN, RUSSEL W., Detroit, Michigan—*Metalurgical Engineering*; ASM, Tau Beta Pi.
- BUSH, WESLEY E., Port Huron, Michigan—*Mechanical Engineering*. Page 38.
- BYRNES, CHARLES R., Evanston, Illinois—*Mechanical Engineering*; ASME, Camera Club. Page 34.
- CAMPBELL, ROBERT E., Brainerd, Minnesota—*Geological Engineering*; Sigma Rho. Page 63.
- CARLSON, EUGENE S., Grand Rapids, Michigan—*Chemical Engineering*; AICHE, Rifle Club. Page 52.
- CARLSON, JOHN E., Bessemer, Michigan—*Electrical Engineering*; AIEE. Page 98.
- CHAPMAN, RODGER H., Yorkshire, New York—*Geological Engineering*; AIME, Lode. Page 63.
- CHARLES, FRED M., Jr., Sault Ste. Marie, Michigan—*Metallurgical Engineering*; ASM, Kappa Delta Psi, Square & Compass Club. Page 17.
- CHASE, DAVID G., Bellingham, Washington—*Civil Engineering*; ASCE, ROTC—Advanced, Tau Nu Tau. Page 78.
- CHRISTENSON, ALFRED J., Houghton, Michigan—*Mining Engineering*; AIME. Page 67.
- CHRONOWSKI, THADEUS V., Detroit, Michigan—*Civil Engineering*; ASCE. Page 77.
- CLARK, WILLIAM J., Chassell, Michigan—*Electrical Engineering*; AIEE, Tau Beta Pi. Page 97.
- CLEVENSTINE, ROBERT L., Fruitport, Michigan—*Mining Engineering*; AIME, Delta Sigma Phi, ROTC—Advanced, Tau Nu Tau. Page 69.
- COLLINS, PETER, Chassell, Michigan—*Forestry*. Page 89.
- COON, GEORGE N., Hancock, Michigan—*Civil Engineering*; ASCE. Page 78.
- COON, VIVIAN I., Hancock, Michigan—*Medical Technology*; Newman Club. Page 57.
- CORBIN, DUANE L., Gary, Indiana—*Forestry*; Forestry Club, ROTC—Advanced, Rifle Team, Distinguished Military Student, Captain, Tau Nu Tau, Varsity Rifle Club. Page 88.
- CORNISH, R. ROY, Calumet, Michigan—*Mechanical Engineering*; ASME. Page 37.
- CORTOPASSI, JOHN S., Trimountain, Michigan—*Civil Engineering*; Hockey. Page 77.
- COSSON, HAROLD E., Menominee, Michigan—*Mechanical Engineering*; ASME, Football, Track. Page 32.
- COSTE, ANGELO C., Caspian, Michigan—*Chemical Engineering*; AICHE, Newman Club, Phi Lambda Upsilon, Tau Beta Pi. Page 54.
- COTA, SAMUEL W., Menominee, Michigan—*Electrical Engineering*; AIEE, Eta Kappa Nu, Tau Beta Pi, "Who's Who." Page 97.
- COX, CALVIN E., St. Joseph, Michigan—*Mechanical Engineering*; ASME. Page 37.
- CROTHERS, WILLIAM T., Laurium, Michigan—*Mechanical Engineering*; ASME. Page 38.
- DARLING, RONALD T., Mason, Michigan—*Chemical Engineering*; ACS, AICHE, Camera Club, Lode, Press Club, Radio Club, "Who's Who in Colleges." Page 53.
- DAVIS, JOSEPH, Flint, Michigan—*Chemical Engineering*; AICHE, Camera Club, Chess Club. Page 54.
- DAY, HARRY L., Jr., Lincoln Park, Michigan—*Civil Engineering*; ASCE, Band, Dance Band, Chi Epsilon, Theta Tau, Tri Beta. Page 79.
- DeGHETTO, ROBERT D., Clifton, New Jersey—*Mechanical Engineering*; ASME. Page 33.
- DEJKA, RAYMOND S., Stephenson, Michigan—*Electrical Engineering*; AIEE, Track. Page 99.
- DELL, JACK M., Chicago, Illinois—*Mechanical Engineering*; ASME, Delta Sigma Phi. Page 33.
- DERBY, RICHARD A., Ishpeming, Michigan—*Mineral Dressing*; AIME, Alpha Sigma Mu, Glee Club. Page 27.
- DeSAUTEL, FRANK R., Manistique, Michigan—*Electrical Engineering*; AIEE, Camera Club, ROTC—Advanced, Cadet-Lieutenant, Tau Nu Tau. Page 100.
- DEWAR, FLOYD C., Jr., Traverse City, Michigan—*Civil Engineering*; ASCE, Chi Epsilon. Page 75.
- DIBBLE, DEE L., Adrian, Michigan—*Chemical Engineering*; AICHE, Band, Dance Band, Sigma Rho, Tri Beta. Page 54.
- DICKINSON, E. GALE, Flint, Michigan—*Chemical Engineering*; AICHE, Camera Club, Phi Lambda Upsilon, Tau Beta Pi. Page 54.
- DIONNE, EDWARD A., Marquette, Michigan—*Mechanical Engineering*; ASME, Woodmar Council. Page 37.
- DOBBINS, JAMES E., Bucyrus, Ohio—*Mechanical Engineering*. Page 35.
- DONLEY, RAYMOND J., Muskegon, Michigan—*Metallurgical Engineering*; ASM, Alpha Sigma Mu. Page 17.
- DOUGLAS, HARRY R., Crosswell, Michigan—*Electrical Engineering*; AIEE. Page 98.
- DRAGICEVICH, CLEMENTS, Painesdale, Michigan—*Mechanical Engineering*; ASME, Hockey. Page 36.
- DREWRY, HUGH S., Plymouth, Wisconsin—*Electrical Engineering*; AIEE. Page 98.
- DRUMM, LESTER O., Clintonville, Wisconsin—*Forestry*; Forestry Club. Page 87.
- DUDEY, FREDERICK K., Milwaukee, Wisconsin—*Electrical Engineering*; AIEE, Gamma Delta. Page 97.
- DUDEY, KARL F., Milwaukee, Wisconsin—*Electrical Engineering*; AIEE, Gamma Delta. Page 98.
- EBERHARDT, CHARLES M., Whitmore Lake, Michigan—*Metallurgical Engineering*; ASM, Alpha Sigma Mu, Tau Beta Pi, Woodmar Council. Page 17.
- ECKER, EDMUND J., Green Bay, Wisconsin—*Forestry*; Forestry Club. Page 87.
- ENGLISH, LOWELL G., Crosswell, Michigan—*Mechanical Engineering*; AIME. Page 34.
- ERICKSON, JOSEPH E., Park Ridge, Illinois—*Civil Engineering*; ASCE, Cheer Leader, Delta Sigma Phi, ROTC—Advanced, Air ROTC, "Who's Who in Colleges," Chi Epsilon, Woodmar Council. Page 78.
- ERWIN, JOHN W., Hartford, Michigan—*Engineering Physics*; AIME, Football, Band, Physical Society. Page 45.
- EVANS, GEORGE A., Jr., Grand Rapids, Michigan—*Mechanical Engineering*; ASME, Alpha Phi Omega, Tennis, Varsity Club. Page 32.
- EWING, DANIEL C., Marquette, Michigan—*Electrical Engineering*; AIEE, Boxing, Blue Key, Eta Kappa Nu, Theta Tau, Tau Beta Pi. Page 103.
- FERDON, GORDON A., Marinette, Wisconsin—*Electrical Engineering*; AIEE. Page 101.
- FERRELL, JOSEPH M., Jr., North Muskegon, Michigan—*Metallurgical Engineering*; ASM, Band, Dance Band, Theta Tau, Tri Beta. Page 18.
- FINNEGAN, EDWARD D., Dollar Bay, Michigan—*Electrical Engineering*; Tau Beta Pi, Eta Kappa Nu, "Who's Who in Colleges," AIEE. Page 99.
- FLAA, WILLIAM N., Ishpeming, Michigan—*Civil Engineering*; ASCE. Page 77.
- FLYNN, RAY D., Ishpeming, Michigan—*Civil Engineering*; ASCE, ROTC—Advanced, 1st Lieutenant, Air ROTC, Ski Club. Page 76.
- FOTH, WILLIAM, Lansing, Michigan—*Civil Engineering*; ASCE, Theta Tau, Chi Epsilon. Page 79.
- FOWLE, PHYLLIS E., Grand Rapids, Michigan—*Chemical Engineering*; AICHE, Lode, Press Club. Page 54.



- FRANEY, THOMAS M., Duluth, Minnesota—*Mechanical Engineering*; Page 32.
- FRANK, NORMAN A., Detroit, Michigan—*Metallurgical Engineering*; ASM, Square & Compass Club. Page 19.
- FREEBORN, JOHN C., Rhinelander, Wisconsin—*Electrical Engineering*; Tau Beta Pi, Ski Club. Page 102.
- FREEBORN, WILLIAM A., Rhinelander, Wisconsin—*Electrical Engineering*; AIEE, Tau Beta Pi, Ski Club. Page 102.
- FREEMAN, GORDON D., Midland, Michigan—*Mechanical Engineering*; ASME. Page 31.
- FRENDEWEY, JAMES O., Hazel Park, Michigan—*Mining Engineering*; AIME. Page 68.
- FRY, LEO N., Alabaster, Michigan—*Mechanical Engineering*; ASME, Delta Sigma Phi. Page 33.
- FU, CHING, Washington, D. C.—*Electrical Engineering*; AIEE, Radio Club. Page 99.
- GALBRAITH, ELDON R., Pontiac, Michigan—*Electrical Engineering*; AIEE, Blue Key, Junior Class Vice-President, Keweenawan, Student Council, MCMT Representative to NSA. Page 100.
- GARRETT, JAMES W., Duluth, Minnesota—*Chemical Engineering*, AICHe, Theta Tau. Page 53.
- GEBHARD, THOMAS C., Niles, Ohio—*Electrical Engineering*; AIEE Chairman, Eta Kappa Nu, Tau Beta Pi. Page 97.
- GILBERT, ROBERT E., Wakefield, Michigan—*Electrical Engineering*; Page 101.
- GLASER, EDWARD J., Menominee, Michigan—*Mechanical Engineering*; ASME. Page 32.
- GLASER, JOHN R., Menominee, Michigan—*Mechanical Engineering*; ASME. Page 33.
- GOETHE, PAUL K., Ishpeming, Michigan—*Electrical Engineering*; AIEE. Page 100.
- GOLUEKE, CARL A., Menominee, Michigan—*Mechanical Engineering*; AIME. Page 33.
- GOODYEAR, FRANK T. C., Coldwater, Michigan—*Mineral Dressing*; AIME, ASM, Ski Club. Page 27.
- GOULD, RICHARD J., Berlin, Pennsylvania—*Metallurgical Engineering*; ASM. Page 19.
- GRAY, LATHAN B., Jr., Coldwater, Michigan—*Mining Engineering*; Page 69.
- GREEN, WALLACE A., Saginaw, Michigan—*Electrical Engineering*; AIEE, Radio Club. Page 103.
- GREENAWALT, DAVID F., Battle Creek, Michigan—*Metallurgical Engineering*; AIME, ASM, Golf, Kappa Delta Psi, Ski Club, Varsity Club. Page 18.
- GRESHAM, ROBERT W., Oscoda, Michigan—*Electrical Engineering*; AIEE. Page 98.
- GRIMM, DONALD E., St. Joseph, Michigan—*Metallurgical Engineering*; ASM, Lode. Page 19.
- GRIMSBY, WALTER J., Marquette, Michigan—*Civil Engineering*; ASCE. Page 77.
- GRONSETH, JAMES R., Duluth, Minnesota—*Mechanical Engineering*; ASME. Page 33.
- GYGAX, FREDERICK H., Grand Rapids, Michigan—*Electrical Engineering*; AIEE, Delta Sigma Phi, ROTC—Advanced. Page 99.
- HAATAJA, GEORGE R., Paavola, Michigan—*Mining Engineering*; AIME. Page 67.
- HAGER, JOHN H., Houghton, Michigan—*Mining Engineering*; AIME. Page 69.
- HAKALA, OIVA W., Negaunee, Michigan—*Mining Engineering*; AIME. Page 68.
- HALL, WILLIAM C., Cooley, Minnesota—*Electrical Engineering*; AIEE. Page 103.
- HALLADA, GEORGE J., Crystal Falls, Michigan—*Civil Engineering*; ASCE. Page 75.
- HALSTEAD, CHARLES R., Munising, Michigan—*Mechanical Engineering*; ASME. Page 38.
- HAMALAINEN, ARVI E., Amasa, Michigan—*Mechanical Engineering*; ASME. Page 34.
- HAMALAINEN, EINO H., Amasa, Michigan—*Forestry*; Forestry Club. Page 87.
- HANGELAND, JOSEF, Kristiansand, Norway—*Mechanical Engineering*; ASME, Blue Key, Tau Beta Pi. Page 33.
- HANSON, LAVERN, Ludington, Michigan—*Civil Engineering*; ASCE, Blue Key, Tau Beta Pi, Chi Epsilon. Page 76.
- HANSON, WOODROW L., Dollar Bay, Michigan—*Electrical Engineering*; AIEE, Eta Kappa Nu, Tau Beta Pi. Page 102.
- HARRIS, RICHARD M., Escanaba, Michigan—*Chemical Engineering*; AICHe, Track, Golf, Cross Country, Skiing, Newman Club, Ski Club, Theta Tau. Page 51.
- HARRIS, THEODORE J., Escanaba, Michigan—*Civil Engineering*; ASCE, Newman Club, Tau Beta Pi, Chi Epsilon. Page 77.
- HARRISON, THOMAS M., Detroit, Michigan—*Electrical Engineering*; AIEE. Page 103.
- HASPELMATH, CHARLES E., Jackson Michigan—*Mechanical Engineering*; ASME. Page 33.
- HAUN, JOHN WILLIAM, Kenosha, Wisconsin—*Mechanical Engineering*; ASME, Tau Beta Pi. Page 38.
- HAZEBROOK, HARRY, Grandville, Michigan—*Electrical Engineering*; AIEE, Delta Sigma Phi Corresponding Secretary. Page 100.
- HECKER, THOMAS C., Detroit, Michigan—*Civil Engineering*; ASCE, Delta Sigma Phi, Chi Epsilon. Page 77.
- HEDBERG, OIVA, Bessemer, Michigan—*Electrical Engineering*; AIEE. Page 103.
- HEIKKINEN, CARL, Detroit, Michigan—*Mechanical Engineering*; Page 35.
- HENDERSON, MILTON W., Milwaukee, Wisconsin—*Electrical Engineering*; AIEE. Page 97.
- HENRY, ALBERT, Hancock, Michigan—*Mechanical Engineering*; Blue Key, Rock Knockers. Page 36.
- HICKEY, JOHN H., Jr., Detroit, Michigan—*Metallurgical Engineering*; ASM, Golf, Newman Club, Sigma Rho President, Varsity Club. Page 19.
- HIKES, BURD, Oak Park, Illinois—*Civil Engineering*; ASCE, Basketball, Varsity Tennis Captain, Lode, Press Club, ROTC—Advanced, Cadet Officer, Theta Tau, Varsity Club, Tau Nu Tau President. Page 79.
- HILL, ARNE W., Painesdale, Michigan—*Electrical Engineering*; AIEE, Keweenawan. Page 98.
- HODGES, BRUCE R., Calumet, Michigan—*Electrical Engineering*; AIEE. Page 98.
- HOGSTAD, JAMES E., Big Rapids, Michigan—*Mechanical Engineering*; Page 33.
- HOLLISTER, ROBERT J., Green Bay, Wisconsin—*Civil Engineering*; ASCE, Chi Epsilon. Page 76.
- HOLME, HAROLD E., Hubbell, Michigan—*Forestry*; Forestry Club. Page 87.
- HORSTMAN, ANTON J., Franklin Mine, Michigan—*Chemical Engineering*; AICHe. Page 52.
- HORTON, BUD C., Pierson, Michigan—*Chemical Engineering*; AICHe. Page 52.
- HOSKING, RAYMOND, Hancock, Michigan—*Forestry*; Forestry Club. Page 89.
- HRUBY, THOMAS F., Cleveland Heights, Ohio—*Mining Engineering*; AIME, Sophomore Vice-President, Lode, Keweenawan, Delta Sigma Phi, Press Club, Ski Club, Student Council. Page 69.
- HULL, ROBERT L., Big Rapids, Michigan—*Civil Engineering*; Keweenawan. Page 77.
- IANNETTONI, LOUIS, Jr., Solvay, New York—*Metallurgical Engineering*; ASM. Page 18.
- JACOBS, WALTER P., Adrian, Michigan—*Mechanical Engineering*; ASME, Sigma Rho. Page 34.
- JACQUES, ROBERT A., Lake Linden, Michigan—*Mechanical Engineering*; ASME. Page 38.
- JAREMA, ADOLF, Detroit, Michigan—*Mechanical Engineering*; ASME, Newman Club, Delta Sigma Phi. Page 31.
- JARVEY, CARROL C., L'Anse, Michigan—*Forestry*; Forestry Club, Air ROTC. Page 87.
- JOHNSON, CARL C., Marquette, Michigan—*Civil Engineering*; Page 76.



- JOHNSON, EUGENE E., Kenosha, Wisconsin—*Civil and Mechanical Engineering*; ASCE, ASME. Page 79.
- JOHNSON, PHILIP F., Iron Mountain, Michigan—*Mechanical Engineering*; ASME, Camera Club, Wesley Foundation. Page 34.
- JOHNSON, ROBERT E., Hazel Park, Michigan—*Civil Engineering*; ASCE, Keweenaw, Theta Tau. Page 79.
- JOHNSON, ROBERT G., Sault Ste. Marie, Michigan—*Mechanical Engineering*. Page 38.
- JOHNSON, RUSSELL A., Duluth, Minnesota—*Forestry*; Varsity Rifle Club. Page 88.
- JOHNSON, TOIVO A., Ironwood, Michigan—*Mineral Dressing and Mining Engineering*. Page 68.
- JONES, ROBERT E., Elmhurst, Illinois—*Chemical Engineering*; AICHE. Page 53.
- JOSEPHSON, MORRIS R., Ironwood, Michigan—*Mechanical Engineering*; ASME. Page 36.
- KARGELA, WILLIAM I., Calumet, Michigan—*Mechanical Engineering*. Page 37.
- KARINIEMI, DANIEL E., Mohawk, Michigan—*Mechanical Engineering*. Page 31.
- KARKOSKI, Frank J., Jr., Detroit, Michigan—*Electrical Engineering*; AIEE. Page 102.
- KARPINEN, RAYMOND A., Atlantic Mine, Michigan—*Mechanical Engineering*. Page 31.
- KASS, ROBERT A., Menominee, Michigan—*Mechanical Engineering*; ASME, ROTC Rifle Team. Page 31.
- KAUFMAN, ROBERT W., Escanaba, Michigan—*Civil Engineering*; ASCE. Page 76.
- KAUPPILA, PAUL, Copper City, Michigan—*Electrical Engineering*; AIEE. Page 99.
- KAZMIERCZAK, ALFRED V., Detroit, Michigan—*Electrical Engineering*; AIEE, Camera Club, Delta Sigma Phi, Newman Club, Ski Club. Page 100.
- KEIR, JAMES M., Detroit, Michigan—*Mechanical Engineering*; Sigma Rho. Page 35.
- KELLOW, FRED B., South Range, Michigan—*Civil Engineering*; ASCE, Hockey, Sigma Rho, Varsity Club. Page 76.
- KEMPINEN, VERNER, South Range, Michigan—*Electrical Engineering*; AIEE. Page 100.
- KESSLER, RICHARD L., Green Bay, Wisconsin—*Mechanical Engineering*; ASME, Sigma Rho. Page 35.
- KINNUNEN, REINO E., Chassell, Michigan—*Mechanical Engineering*; ASME. Page 31.
- KIVARI, PAUL W., Chassell, Michigan—*Mechanical Engineering*; ASME. Page 36.
- KIVISTO, LAURI J., Negaunee, Michigan—*Mechanical Engineering*; ASME, Delta Sigma Phi, Ski Club. Page 38.
- KLEIMOLA, FRANK W., Ironwood, Michigan—*Mechanical Engineering*; ASME. Page 31.
- KLUNGNESS, JAMES A., Kingsford, Michigan—*Electrical Engineering*; AIEE, Blue Key Secretary-Treasurer, Eta Kappa Nu, Theta Tau, Tau Beta Pi. Page 100.
- KNAPP, CLYDE A., Cable, Wisconsin—*Forestry*; Forestry Club, Rifle Team. Page 88.
- KNAPSCHAEFER, DALE, Coldwater, Ohio—*Electrical Engineering*; AIEE, Newman Club. Page 101.
- KOHLER, KARL L., Mt. Clemens, Michigan—*Metallurgical Engineering*; ASM, Tennis, Sigma Rho, Ski Club. Page 19.
- KOIVUNIEMI, REUBEN W., Detroit, Michigan—*Civil Engineering*. Page 77.
- KOOPMAN, HERMAN W., Jr., Spartanburg, South Carolina—*Chemical Engineering*; AICHE, Delta Sigma Phi. Page 51.
- KOSITZKY, KENNETH A., Escanaba, Michigan—*Mechanical Engineering*; ASME, Kappa Delta Psi. Page 37.
- KRIEG, MILTON J., Charlotte, Michigan—*Forestry*; Forestry Club Secretary-Treasurer. Page 88.
- KUHNA, DOUGLAS A., Atlantic Mine, Michigan—*Mechanical Engineering*; ASME, Tau Beta Pi. Page 38.
- KUST, ROBERT, West Allis, Wisconsin—*Metallurgical Engineering*; ASM, Basketball, Tennis, Varsity Club. Page 19.
- KVINTUS, WALTER N., Flushing, Michigan—*Metallurgical Engineering*; ASM, Dormitory Club. Page 19.
- KWIATKOWSKI, ROBERT A., Saginaw, Michigan—*Mechanical and Electrical Engineering*; AIEE, ASME, Newman Club. Page 34.
- KYHKYNNEN, PAAVO H., Camden, New Jersey—*Mining Engineering*; AIME. Page 69.
- LACOMBE, OCTAVIO C., Rio de Janeiro, Brazil—*Civil Engineering*; ASCE, Kappa Delta Psi. Page 79.
- LaDUKE, JOHN A., Midland, Michigan—*Electrical Engineering*; AIEE. Page 97.
- LaFORAIS, LOUIS W., III, Republic, Michigan—*Chemical Engineering*; AICHE, Track, Ski Club, Theta Tau, Varsity Club. Page 54.
- LaFORET, HENRY A., Detroit, Michigan—*Metallurgical Engineering*; ASM, Alpha Sigma Mu, Newman Club, Theta Tau. Page 18.
- LaLUZERNE, MELVIN, Green Bay, Wisconsin—*Mechanical Engineering*; ASME, Alpha Phi Omega President, Camera Club, Newman Club, Rock Knockers, ROTC—Advanced, Major, Ski Club, Air ROTC. Page 37.
- LANG, JOHN D., Chicago, Illinois—*Mechanical Engineering*; ASME, Dormitory Club. Page 37.
- LANTTO, Yalmer E., Atlantic Mine, Michigan—*Chemical Engineering*; AICHE. Page 53.
- LARSEN, A. DAVID, Quinnesec, Michigan—*Chemical Engineering*; AICHE. Page 53.
- LARSEN, STERLING J., Minneapolis, Minnesota—*Metallurgical Engineering*. Page 19.
- LATVA, ARTHUR E., Hancock, Michigan—*Mechanical Engineering*; ASME. Page 37.
- LAURILA, T. ELMER, Puritan, Michigan—*Civil and Mining Engineering*; AIEE Vice-President. Page 67.
- LeCOMPTE, ARCHIE R., Muskegon, Michigan—*Chemical Engineering*; AICHE, Sigma Rho, Military Council, Sigma Alpha. Page 52.
- LEMPPIO, GUNNARD H., Detroit, Michigan—*Mechanical Engineering*; ASME. Page 38.
- LENZ, J. H., Houghton, Michigan—*Civil Engineering*; ASCE, Golf, Newman Club. Page 75.
- LEONARD, DONALD J., Detroit, Michigan—*Chemical Engineering*; AICHE, Theta Tau Treasurer. Page 53.
- LEWANDOWSKI, ARTHUR E., Armstrong Creek, Wisconsin—*Electrical Engineering*; AIEE, Delta Sigma Phi, ROTC—Advanced, Tau Nu Tau. Page 102.
- LILJEBLAD, GUY, Milwaukee, Wisconsin—*Electrical Engineering*; AIEE. Page 97.
- LILLVIS, ILMAR W., Bessemer, Michigan—*Electrical Engineering*; AIEE, Radio Club. Page 99.
- LINDGREN, RALPH G., Stambaugh, Michigan—*Engineering Physics*; Physical Society. Page 45.
- LIVINGSTON, RICHARD W., Salt Lake City, Utah—*Mineral Dressing*; Keweenaw Editor-in-Chief, Ski Club, Student Council, Theta Tau, J-Hop Chairman, '48. Page 27.
- LOOSEMORE, WESLEY G., Skanee, Michigan—*Electrical Engineering*; AIEE, Camera Club. Page 99.
- LUDER, LESLIE J., Duluth, Minnesota—*Electrical Engineering*; AIEE, Blue Key, Radio Club, Sigma Rho. Page 98.
- LUDOWISE, BERNARD M., Marquette, Michigan—*Mechanical Engineering*. Page 31.
- LUND, SHIRLEY S., Michigamme, Michigan—*General Science*; Mathematics, Gamma Delta. Page 110.
- LUNDIN, GEORGE A., Jr., Iron Mountain, Michigan—*Mechanical Engineering*; ASME. Page 31.
- LUTTINEN, REINO W., Mass, Michigan—*Electrical Engineering*; AIEE. Page 99.



- McDONALD, ROGER K., Gladstone, Michigan—*Forestry*; Forestry Club, Band, Ski Club. Page 88.
- McFARLAND, WILLIAM A., Caro, Michigan—*Mechanical Engineering*; ASME, Newman Club. Page 33.
- McKEAN, ALBERT G., Riverside, Connecticut—*Mineral Dressing*. Page 27.
- McKENNA, JEROME J., Gladwin, Michigan—*Electrical Engineering*; AIEE, Newman Club. Page 103.
- McNAY, ALBERT, Detroit, Michigan—*Mechanical Engineering*; ASME, Football, Track, Kappa Delta Psi, Varsity Club. Page 35.
- McQUADE, ROBERT J., Marquette, Michigan—*Civil Engineering*; ASCE. Page 76.
- MACKEY, RALPH S., Calumet, Michigan—*Mechanical Engineering*; ASME. Page 36.
- MAGNUSON, JOHN F., Ishpeming, Michigan—*Mining Engineering*; AIME, ROTC—Advanced, Cadet 1st Lieutenant, Air ROTC. Page 69.
- MAIN, KEITH "A", Jackson, Michigan—*Mechanical Engineering*; ASME. Page 31.
- MAKI, JOAN C., Hancock, Michigan—*Medical Technology*. Page 57.
- MAKI, LEONARD W., Ramsay, Michigan—*Mechanical Engineering*. Page 32.
- MANSFIELD, ELMER W., Sault Ste. Marie, Michigan—*Electrical Engineering*; AIEE, Newman Club, ROTC—Advanced, Captain, Tau Nu Tau. Page 101.
- MARIN, MARTIN J., Gwinn, Michigan—*Mining Engineering*; AIME, Tau Beta Pi. Page 67.
- MARTTI, ARMAS J., Chassell, Michigan—*Mechanical Engineering*. Page 37.
- MARTTILA, L. R., Atlantic Mine, Michigan—*Civil Engineering*; ASCE. Page 77.
- MASCIOLI, NORMAN F., Timmins, Ontario, Canada.—*Civil Engineering*; ASCE, Blue Key, Kappa Delta Psi. Page 78.
- MASNAGHETTI, RAYMOND K., Bessemer, Michigan—*Electrical Engineering*; AIEE, Radio Club, Tau Beta Pi. Page 102.
- MATHESON, ROBERT R., Laurium, Michigan—*Physics and Mechanical Engineering*; Tau Beta Pi, Physics Club. Page 36.
- MATSON, CHARLES L., Houghton, Michigan—*Mining Engineering*; AIME. Page 68.
- MATSON, EDSEL D., Dollar Bay, Michigan—*Mechanical Engineering*. Page 38.
- MATSON, JACK D., Sarasota, Florida—*Mining Engineering*; AIME. Page 67.
- MATSON, ROBERT P., Houghton, Michigan—*Mining Engineering*; AIME, Tau Beta Pi. Page 68.
- MATTSON, GEORGE C., Hancock, Michigan—*Mechanical Engineering*; Football. Page 36.
- MEAD, ROBERT R., Flint, Michigan—*Mechanical Engineering*. Page 33.
- MELHUISE, DONALD S., Westwood, Los Angeles, California—*Mechanical Engineering*; ASME. Page 33.
- MELSON, ROBERT E., Big Rapids, Michigan—*Mechanical Engineering*; ASME. Page 34.
- MENDELIN, RUDOLPH, Calumet, Michigan—*Chemical Engineering*. Page 53.
- MEYER, LUTHER A., Michigan City, Indiana—*Mechanical Engineering*. Page 32.
- MIATECH, GERALD J., Stambaugh, Michigan—*Engineering Physics*, Kappa Delta Psi, Physical Society. Page 45.
- MICKELSEN, JAMES A., Hancock, Michigan—*Mechanical Engineering*; ASME, Basketball, Varsity Club. Page 36.
- MIKLAS, V. A., Manistee, Michigan—*Electrical and Mechanical Engineering*; AIEE, ASME, Lode, Ski Club, Student Council, Theta Tau. Page 100.
- MIKULICH, VICTOR E., Bessemer, Michigan—*Electrical Engineering*; AIEE. Page 97.
- MILLER, KENNETH H., South Range, Michigan—*Mechanical Engineering*; ASME. Page 34.
- MILLER, WALTER H., Iron Mountain, Michigan—*Electrical Engineering*; AIEE, Band, Tri Beta. Page 100.
- MILLS, JAMES R., Duluth, Minnesota—*Mechanical Engineering*; ASME, Newman Club. Page 37.
- MONTVEDAS, JOSEPH P., Chicago, Illinois—*Mechanical Engineering*. Page 37.
- MOON, GRANT P., Battle Creek, Michigan—*Electrical Engineering*; AIEE, Eta Kappa Nu, ROTC—Advanced, Captain, Air ROTC. Page 101.
- MOORE, WILLIAM T., Grosse Pointe, Michigan—*Metallurgical Engineering*; ASM. Page 17.
- MORIN, GERALD A., L'Anse, Michigan—*Electrical Engineering*. Page 97.
- MORSE, ARCHIBALD E., Jr., Norfolk, Virginia—*Forestry and Civil Engineering*; ASCE, Forestry Club, Sigma Rho. Page 79.
- MUSCHELL, JAMES E., Cheboygan, Michigan—*Civil Engineering*; ASCE. Page 75.
- MUSICH, BENEDICT A., Laurium, Michigan—*Mechanical Engineering*; ASME, Newman Club. Page 32.
- MYERS, ARTHUR J., South Haven, Michigan—*Geological Engineering*; AIME, Rockknockers, Tau Beta Pi, University of Michigan Fellowship. Page 63.
- NAULT, KENNETH D., Ishpeming, Michigan—*Mechanical Engineering*; ASME. Page 34.
- NEKERVIS, WILLIAM F., Hancock, Michigan—*Chemical Engineering*; AICHE, Blue Key, "Who's Who—Students", Keweenaw, Band, Phi Lambda Upsilon, ROTC—Advanced, Student Council, Tri Beta, Tau Beta Pi, Wesley Foundation. Page 54.
- NELSON, RICHARD P., LaGrange, Illinois—*Mechanical Engineering*; ASME, Junior Secretary-Treasurer, Keweenaw, Delta Sigma Phi, ROTC—Advanced, Tau Nu Tau. Page 32.
- NELSON, ROBERT E., Pontiac, Michigan—*Mechanical Engineering*; ASME, Camera Club, Delta Sigma Phi, Lode, Press Club. Page 34.
- NEUBACHER, ROBERT J., LaGrange, Illinois—*Mechanical Engineering*; ASME, Camera Club, Keweenaw, Lode, ROTC—Advanced, Tau Nu Tau. Page 37.
- NICHOLLS, EDWIN T., Mohawk, Michigan—*Mechanical Engineering*; ASME. Page 31.
- NIEMI, WILLIAM R., Atlantic Mine, Michigan—*Mechanical Engineering*. Page 36.
- NOPONEN, HAROLD W., Detroit, Michigan—*Electrical Engineering*; AIEE, Gamma Delta, Ski Club. Page 99.
- NOWAK, GEORGE A., Milwaukee, Wisconsin—*Electrical Engineering*; AIEE, ROTC—Advanced, Distinguished Military Student, Captain, Tau Nu Tau, Military Council Chairman. Page 102.
- OLIVEIRA, EVANDRO H. De S., Rio de Janeiro, Brazil—*Geological Engineering*; AIME, Kappa Delta Psi, Rockknockers. Page 63.
- OLSEN, ALAN E., Hancock, Michigan—*Chemical Engineering*. Page 51.
- OLSON, CLARENCE A., Hancock, Michigan—*Mechanical Engineering*; ASME. Page 35.
- OLSON, KENNETH C., Ishpeming, Michigan—*Mineral Dressing*; AIME, Blue Key. Page 27.
- OLSON, WILLIAM R., Menominee, Michigan—*Electrical Engineering*; AIEE, Eta Kappa Nu, Tau Beta Pi, Rifle Club. Page 100.
- ORCIUCH, CHESTER J., Worcester, Massachusetts—*Metallurgical Engineering*; ASM, Alpha Sigma Mu, Camera Club, Radio Club, Tau Beta Pi. Page 19.
- OTTO, GEORGE K., Detroit, Michigan—*Mechanical Engineering*; ASME. Page 35.
- PAGE, JEROME W., Adrian, Michigan—*Mechanical Engineering*; ASME, Football, Sigma Rho. Page 35.
- PAJUNEN, ERLAND O., Newberry, Michigan—*Chemical Engineering*; ACS, AICHE, Band. Page 54.
- PARADISO, ALDO M., Sault Ste. Marie, Michigan—*Chemical Engineering*; AICHE, Newman Club, Sigma Rho, Dance Committee. Page 51.



- PATEK, JACK W., Ironwood, Michigan—*Civil Engineering*; ASCE, Football, Kappa Delta Psi, Varsity Club. Page 78.
- PEARSON, PHILLIP A., Mears, Michigan—*Civil Engineering*; ASCE. Page 76.
- PECK, CARL S., Birmingham, Michigan—*Mechanical Engineering*; ASME, Band. Page 36.
- PECKHAM, ROBERT A., Grand Rapids, Michigan—*Mining Engineering*; AIME. Page 69.
- PEKAREK, KENNETH L., Pontiac, Michigan—*Electrical Engineering*; AIEE, Gamma Delta, Radio Club. Page 103.
- PELTOKANGAS, NICHOLAS J., Painesdale, Michigan—*Electrical Engineering*; AIEE. Page 101.
- PENMAN, ROGER T., Mt. Clemens, Michigan—*Mechanical Engineering*; ASME, Theta Tau, Tau Beta Pi. Page 36.
- PENNANEN, ERLAND W., Toivola, Michigan—*Mechanical Engineering*. Page 32.
- PENOKIE, BERNARD C., L'Anse, Michigan—*Electrical Engineering*; AIEE, Track, Varsity Club. Page 98.
- PEPPER, ALMON A., Jr., Wausau, Wisconsin—*Forestry*; Forestry Club. Page 89.
- PERDZOCK, ROBERT C., Kingsford, Michigan—*Electrical Engineering*; AIEE, Rifle Team, ROTC—Advanced, Air ROTC, Sigma Alpha President. Page 102.
- PETERSEN, BERNHARDT H., Ishpeming, Michigan—*Mining Engineering*; AIME, Ski Club. Page 69.
- PETERSON, CARL E., Manistique, Michigan—*Civil Engineering*; ASCE, Kappa Delta Psi, Square and Compass Club. Page 76.
- PETERSON, ROBERT J., Ironwood, Michigan—*Civil Engineering*; ASCE, Football Captain, Camera Club, Theta Tau, Varsity Club, Chi Epsilon. Page 77.
- PHILLIPS, JAMES G., Port Huron, Michigan—*Mining Engineering*; AIME, Theta Tau. Page 67.
- PHILLIPS, ROBERT C., Grand Rapids, Michigan—*Chemical Engineering*; ACS, AICHE. Page 53.
- PIERCE, RICHARD L., Mundelein, Illinois—*Forestry*; Forestry Club, ROTC—Advanced, Distinguished Military Student, Air ROTC, Ski Club, Dormitory Club Secretary-Treasurer. Page 87.
- PIERCE, ROBERT L., Adrian, Michigan—*Electrical Engineering*; AIEE, Football, Blue Key, Student Council, Theta Tau, Varsity Club, "Who's Who in Colleges." Page 100.
- PINDER, THOMAS Z., North Muskegon, Michigan—*Metallurgical Engineering*; AIME, ASM, Basketball, Football, Varsity Club. Page 19.
- PINES, ISADORE, Rogers City, Michigan—*Electrical Engineering*; AIEE, Kappa Delta Psi, Band, Dance Band, Tri Beta. Page 103.
- POGACICH, NICK C., Ironwood, Michigan—*Chemical Engineering*; AICHE, Blue Key, Kappa Delta Psi, Phi Lambda Upsilon, Student Council, Tau Beta Pi, "Who's Who in Colleges." Page 54.
- POLLARI, HOWARD, Ironwood, Michigan—*Mechanical Engineering*; ASME. Page 31.
- POTTER, WAYNE D., Bear Lake, Michigan—*Civil Engineering*; ASCE, Blue Key, Kappa Delta Psi. Page 78.
- PRATT, ELY A., Stephenson, Michigan—*Mechanical Engineering*; ASME. Page 33.
- PRICE, JACK C., Oshkosh, Wisconsin—*Civil Engineering*; ASCE, Blue Key, Chi Epsilon, Square and Compass Club. Page 76.
- PRISK, BERT C., Detroit, Michigan—*Electrical Engineering*; AIEE Secretary, Eta Kappa Nu. Page 101.
- QUAYLE, GEORGE T., Jr., Ishpeming, Michigan—*Mechanical Engineering*. Page 38.
- QUAYLE, ROBERT J., Iron River, Michigan—*Mechanical Engineering*; ASME. Page 35.
- QUELLO, LIONEL B., Laurium, Michigan—*Mechanical Engineering*; ASME. Page 34.
- QUELLO, LOUIS P., Calumet, Michigan—*Mechanical Engineering*; ASME. Page 34.
- RAHOI, LEO M., Iron Mountain, Michigan—*Civil Engineering*. Page 79.
- RAKETICH, WALTER, Jr., Kingsford, Michigan—*Civil Engineering*; ASCE, Delta Sigma Phi, Tau Nu Tau. Page 76.
- RANDOLPH, RICHARD E., Newberry, Michigan—*Mechanical Engineering*; Sigma Rho. Page 34.
- RAUSCH, FLORENTINE A., Big Stone City, South Dakota—*Electrical Engineering*; AIEE, Radio Club, Newman Club. Page 99.
- RAUTIO, WILBUR S., Hurley, Wisconsin—*Electrical Engineering*; AIEE. Page 101.
- RECHA, PAUL T., Rhinelander, Wisconsin—*Forestry*; Forestry Club. Page 87.
- REED, FRED A., Grosse Pointe Park, Michigan—*Mechanical Engineering*; ASME, Blue Key, Kappa Delta Psi, Ski Club, Student Council, Dance Committee, "Who's Who in Colleges." Page 34.
- REHNQUIST, GEORGE D., Escanaba, Michigan—*Electrical Engineering*; AIEE, Basketball, Kappa Delta Psi, Varsity Club. Page 99.
- REICHARDT, HAROLD M., Wallace, Michigan—*Chemical Engineering*. Page 52.
- REID, MIKE, Chicago, Illinois—*Mining Engineering*; AIME. Page 69.
- RHOADS, LLOYD A., Montgomery, Michigan—*Civil Engineering*; ASCE, Square and Compass Club. Page 79.
- RICE, FRANKLIN S., Jr., Duluth, Minnesota—*Electrical Engineering*; AIEE, Sigma Rho Treasurer, Ski Club. Page 102.
- RICE, RICHARD D., Duluth, Minnesota—*Chemical Engineering*; AICHE, Ski Club, Phi Lambda Upsilon, Tau Beta Pi. Page 54.
- RICHARDS, HEBER R., Hancock, Michigan—*Electrical Engineering*; AIEE, Blue Key, Eta Kappa Nu, Student Council, NSA Representative, "Who's Who in Colleges." Page 98.
- RIDDELL, PAUL A., Houghton, Michigan—*Geological Engineering*; AIME, Keweenaw, Ski Club. Page 63.
- RINGLER, DONALD W., Cedarville, Michigan—*Civil Engineering*; ASCE. Page 77.
- RINGLER, WILLIAM C., Benton Harbor, Michigan—*Mechanical Engineering*. Page 38.
- RIVARD, CLETUS C., Daggett, Michigan—*Electrical Engineering*; AIEE, Newman Club, Theta Tau. Page 103.
- ROBERTS, PAUL G., Princeton, Michigan—*Mechanical Engineering*; ASME. Page 35.
- ROBERTS, ROBERT L., Escanaba, Michigan—*Mechanical Engineering*; ASME, Delta Sigma Phi. Page 36.
- ROBINSON, C. J., Port Huron, Michigan—*Mining Engineering*; AIME, Camera Club, ROTC—Advanced, Distinguished Military Student, Tau Nu Tau, Square and Compass Club. Page 68.
- ROMBERG, JOHN L., Hancock, Michigan—*Electrical Engineering*; AIEE. Page 101.
- ROVANO, JAMES, Calumet, Michigan—*Mechanical Engineering*. Page 31.
- RUSSELL, JOE K., Flint, Michigan—*Metallurgical Engineering*; ASM, Gamma Delta, Lode, Press Club, Ski Club. Page 19.
- RUTKA, ROBERT D., Duluth, Minnesota—*Mechanical Engineering*; ASME, Newman Club. Page 32.
- ST. ONGE, RAYMOND C., L'Anse, Michigan—*Forestry*; Forestry Club. Page 89.
- ST. ONGE, WILLARD C., L'Anse, Michigan—*Forestry*. Page 87.
- SALTER, CHARLES B., Detroit, Michigan—*Metallurgical Engineering*; ASM, Alpha Sigma Mu, Senior Class President, Lode, Press Club, Ski Club, Tau Beta Pi, N.S.A. Representative. Page 18.
- SANDHUSEN, WALTER H., Milwaukee, Wisconsin—*Forestry*; Forestry Club. Page 87.
- SAVINIEMI, RAFAEL, Painesdale, Michigan—*Electrical Engineering*. Page 103.



- SAXON, DONALD P., Detroit, Michigan—*Chemical Engineering*; AICHE, Delta Sigma Phi. Page 51.
- SCANLAN, DICK, Detroit, Michigan—*Mechanical Engineering*; ASME, Delta Sigma Phi, Newman Club, ROTC—Advanced, Air ROTC, Woodmar Council. Page 35.
- SCHNITZEL, RANDOLPH H., Ozone Park, New York—*Metallurgical Engineering*; ASM, Alpha Sigma Mu, Dormitory Club President. Page 17.
- SCHWALM, DONALD J., Detroit, Michigan—*Metallurgical Engineering*; ASM, Alpha Sigma Mu, Ski Club, Tau Beta Pi. Page 19.
- SEE, ELWIN V., Clawson, Michigan—*Mechanical Engineering*; ASME, Blue Key, Delta Sigma Phi, Tau Nu Tau President. Page 37.
- SENER, FRED P., Chicago, Illinois—*Electrical Engineering*; AIEE, Newman Club, Air ROTC, Sigma Alpha. Page 98.
- SHANDLEY, PAUL D., Niagara Falls, New York—*Engineering Physics*; Physical Society. Page 45.
- SHEPECK, WILLIAM J., Escanaba, Michigan—*Mechanical Engineering*; Student Council, Theta Tau. Page 36.
- SHIPMAN, DUNCAN U., Duluth, Minnesota—*Civil Engineering*; ASCE. Page 78.
- STEKIERSKI, MARION, Goodman, Wisconsin—*Electrical Engineering*; AIEE, Delta Sigma Phi, Newman Club, ROTC—Advanced, Tau Nu Tau. Page 103.
- SIEPAK, MITCHELL S., Detroit, Michigan—*Electrical Engineering*; AIEE, Camera Club, Newman Club, Sigma Rho. Page 99.
- SIMONSON, ROBERT J., Stambaugh, Michigan—*Electrical Engineering*; AIEE. Page 97.
- SPINEN, ROY T., Iron Mountain, Michigan—*Civil Engineering*; ASCE, Football, Varsity Club. Page 75.
- SKEELS, HARRY R., Manitowac, Wisconsin—*Chemical Engineering*; AICHE, Varsity Club. Page 54.
- SLEEMAN, CALVIN L., Iron River, Michigan—*Mechanical Engineering*; ASME. Page 32.
- SMITH, MARVIN E., Stambaugh, Michigan—*Electrical Engineering*; AIEE. Page 100.
- SMITH, PHILIP M., Crystal Falls, Michigan—*Electrical Engineering*; AIEE, Blue Key, Kappa Delta Psi, Tau Beta Pi. Page 102.
- SMITH, RICHARD R., Marquette, Michigan—*Mining Engineering*; AIME, Delta Sigma Phi, Tau Beta Pi, Keweenaw, Lode, Press Club, Ski Club. Page 67.
- SNYDER, EDWARD H., Jr., Salt Lake City, Utah—*Chemical Engineering*; AICHE, Football, Blue Key, Ski Club, Theta Tau, Varsity Club. Page 51.
- SORENSEN, CLARENCE A., Muskegon, Michigan—*Mechanical Engineering*; ASME. Page 35.
- SPERRY, CHESTER, Kalamazoo, Michigan—*Mechanical Engineering*; ASME. Page 35.
- SPRATT, GEORGE A., Pine Lawn, Missouri—*Electrical Engineering*; AIEE, Radio Club. Page 102.
- STALLARD, RALPH M., East Jordan, Michigan—*Electrical Engineering*. Page 99.
- STANAWAY, SHELDON J., Norway, Michigan—*Mechanical Engineering*; ASME, Tau Beta Pi. Page 31.
- STANTON, LAURENCE M., Houghton, Michigan—*Electrical Engineering*. Page 102.
- STASKIEWICZ, CASIMIR J., Bailey, Michigan—*Civil Engineering*; Newman Club, ASCE President, Blue Key, Delta Sigma Phi. Page 78.
- STEEGER, ELMER J., Frankfort, Michigan—*Mechanical Engineering*; ASME. Page 37.
- STONE, FRED, Oconto, Wisconsin—*Chemical Engineering*; AICHE, Phi Lambda Upsilon, Ski Club, Tau Beta Pi, Wesley Foundation. Page 51.
- STOPAR, ALBERT, Calumet, Michigan—*Electrical Engineering*; AIEE, "Who's Who in Colleges." Page 99.
- STOWITTS, HARRY T., Jr., Grand Rapids, Michigan—*Electrical Engineering*; AIEE, Delta Sigma Phi, Eta Kappa Nu, Ski Club, Tau Beta Pi. Page 101.
- STROM, ROBERT W., Ashland, Wisconsin—*Mechanical Engineering*; ASME. Page 32.
- STUCKEY, VIRGINIA, Alma, Michigan—*Mechanical Engineering*; ASME. Page 31.
- STUK, MARTIN E., Chicago, Illinois—*Geological Engineering*; Theta Tau. Page 63.
- SWANSON, ARTHUR B., Duluth, Minnesota—*Electrical Engineering*; AIEE, Band, Tri Beta. Page 102.
- SWARENS, EARL W., Detroit, Michigan—*Metallurgical Engineering*; ASM, Camera Club. Page 18.
- SWARTWOUT, DONALD G., Jr., Berwyn, Illinois—*Metallurgical Engineering*; ASM, Delta Sigma Phi. Page 17.
- SZPIEG, CASIMIR J., Detroit, Michigan—*Mechanical Engineering*; ASME, Band, Newman Club. Page 36.
- TABOR, FRANK L., Royal Oak, Michigan—*Electrical and Mechanical Engineering*; AIEE, ASME. Page 97.
- TAYLOR, REGINALD E., Syracuse, New York—*Electrical Engineering*; Square and Compass Club. Page 101.
- TEDDY, HAROLD D., Laurium, Michigan—*Forestry*; Forestry Club. Page 88.
- TERRACALL, RUSSEL B., Houghton, Michigan—*Metallurgical Engineering*; ASM, Alpha Sigma Mu, Tau Beta Pi, Chess Club President. Page 18.
- TERVO, FREDERICK E., Detroit, Michigan—*Metallurgical Engineering*; ASM, Theta Tau. Page 18.
- THIELAN, BENJAMIN J., Adrian, Michigan—*Electrical Engineering*; AIEE. Page 102.
- THOMAS, JAMES A., Ironwood, Michigan—*Electrical Engineering*. Page 100.
- TINETTI, ARTHUR R., Laurium, Michigan—*Metallurgical Engineering*; ASM, Alpha Sigma Mu, Sigma Rho. Page 18.
- TOELLE, HARRY A., Jr., Terre Haute, Indiana—*Mining Engineering*; AIME Vice-President, Football, Varsity Club. Page 67.
- TOUNG, GEORGE D., Rochester, New York—*Geological Engineering*; AIME, Rockknockers. Page 63.
- TRETHERWAY, BURTON S., Houghton, Michigan—*Civil Engineering*; ASCE, Tau Beta Pi, Chi Epsilon, Square and Compass Club. Page 78.
- TSCHANTZ, WILLARD O., Brillion, Wisconsin—*Mechanical Engineering*; ASME, Blue Key, Tau Beta Pi, Kappa Delta Psi. Page 34.
- UTKEN, JAY, Detroit, Michigan—*Chemical Engineering*; AICHE. Page 53.
- VanEFFEN, WILLIAM J., Escanaba, Michigan—*Electrical Engineering*; AIEE, Delta Sigma Phi. Page 99.
- VAUGHAN, HARRY H., St. Clair Shores, Michigan—*Chemical Engineering*; ACS, AICHE, Phi Lambda Upsilon. Page 53.
- VEESER, WILLIAM L., Alpha, Michigan—*Forestry*; Forestry Club, Newman Club. Page 88.
- VITTONI, JAMES, Mohawk, Michigan—*Mechanical Engineering*. Page 34.
- VOELKER, MERVIN J., Laurium, Michigan—*Mining Engineering*; Football. Page 69.
- VOYLES, JACK L., Detroit, Michigan—*Electrical Engineering*; AIEE, Blue Key, Eta Kappa Nu, Gamma Delta, Distinguished Military Student, Captain, Air ROTC, Sigma Rho, Ski Club, Sigma Alpha, Tau Beta Pi. Page 101.
- VRUGGINK, JOHN E., Grand Rapids, Michigan—*Metallurgical Engineering*; ASM, Camera Club, Delta Sigma Phi, Alpha Sigma Mu, Ski Club, Square and Compass Club. Page 17.
- VUKOVICH, THOMAS J., Flint, Michigan—*Chemical Engineering*; AICHE. Page 52.
- WALKER, JAMES J., Thief River Falls, Minnesota—*Mining and Mineral Dressing Engineering*; AIME Secretary. Page 67.
- WALLACE, ROBERT R., Hibbing, Minnesota—*Mining and Mineral Dressing Engineering*; AIME, Alpha Sigma Mu Vice-President, Blue Key, Keweenaw, Tau Beta Pi Secretary, Student Council Vice-President, "Who's Who in Colleges." Page 68.
- WARD, WILLIAM E., Muskegon, Michigan—*Chemical Engineering*; AICHE, Delta Sigma Phi, Newman Club. Page 51.



- WATKINS, ROSS D., Norway, Michigan—*Civil Engineering*; ASCE, Delta Sigma Phi Treasurer, Chi Epsilon. Page 78.
- WATZ, GLEN R., Lum, Michigan—*Civil Engineering*; ASCE, Tau Beta Pi, Chi Epsilon. Page 79.
- WEBER, ERIC R., Detroit, Michigan—*Mechanical Engineering*; Delta Sigma Phi, Eode Circulation Manager. Page 32.
- WERTANEN, M. F., Mass, Michigan—*Electrical Engineering*; AIEE. Page 98.
- WHITNEY, ROBERT W., Royal Oak, Michigan—*Civil Engineering*; Theta Tau. Page 76.
- WILMAN, JAMES W., Ashland, Wisconsin—*Mechanical Engineering*; ASME. Page 34.
- WILSON, FRANCIS C., Memphis, Tennessee—*Metallurgical Engineering*; ASM, Alpha Sigma Mu, Tau Beta Pi, "Who's Who in Colleges." Page 17.
- WINKEL, JOHN A., Oshkosh, Wisconsin—*Civil Engineering*; ASCE, Football, Kappa Delta Psi, Band, Varsity Club President. Page 76.
- WISEMAN, JON R., Marquette, Michigan—*Electrical Engineering*; AIEE, Eta Kappa Nu Secretary, Woodmar Council. Page 98.
- WISEMAN, THOMAS R., Marquette, Michigan—*Civil Engineering*; ASCE, Chi Epsilon. Page 75.
- WITTOCK, JAMES A., Iron Mountain, Michigan—*Electrical Engineering*; AIEE. Page 97.
- WOELK, ROBERT J., Alpena, Michigan—*Mechanical Engineering*; ASME Treasurer, Alpha Phi Omega Vice-President, Delta Sigma Phi, Ski Club. Page 31.
- WOODBIDGE, ROGER M., Jr., Duluth, Minnesota—*Mechanical Engineering*; ASME, Varsity Rifle Team, Varsity Club. Page 32.
- WOODS, ROBERT L., Menominee, Michigan—*Civil Engineering*; ASCE, Kappa Delta Psi, Boxing. Page 77.
- YARED, JACQUES, Beirut, Lebanon, Syria—*Electrical and Civil Engineering*; AIEE, ASCE. Page 103.
- YEADON, DONALD J., Ontonagon, Michigan—*Mechanical Engineering*; ASME, Sigma Rho. Page 37.
- YEREBECK, VERNON S., Marquette, Michigan—*Mechanical Engineering*; ASME, Tau Beta Pi. Page 38.
- ZANELLA, VINCENT J., Ironwood, Michigan—*Electrical Engineering*; AIEE, Tau Beta Pi, Eta Kappa Nu. Page 98.
- ZANONI, HERMAN P., Vulcan, Michigan—*Civil Engineering*; ASCE, Newman Club, Theta Tau. Page 75.
- ZEMSKE, ARTHUR R., Oshkosh, Wisconsin—*Forestry*; Forestry Club. Page 87.



















